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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

SOME CRITICAL AND DESULTORY REMARKS ON RECENT LARYNGOLOGICAL AND RHINO- LOGICAL LITERATURE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Twelfth Paper. Second Series.)

In the May, 1900 issue of THE LARYNGOSCOPE I devoted considerable space to the review of several papers based on anthropometric investigations. They were contributions to the elucidation of the connection between the shape of the hard palate and various intranasal affections. Accepting the measurements as accurate and remembering some previous statistics by E. Fraenkel it would seem also proper to accept the deductions drawn that the shape of the hard palate has a more direct connection with the type of skull than it does as a sequence of postnasal adenoids. The fact that the pathological condition of obstructing lymphoid hypertrophy is much more common with the high arched palate than without, although denied by Fraenkel, is plausibly explained by the assertion that the two conditions have a common factor, viz.: leptoprosopia. That is to say people with dolichocephalic skulls have necessarily narrow, easily obstructed nasal passages and these lead naturally to hypertrophy of the lymphoid material in the naso and oro-pharynx for reasons familiar to all laryngologists. E. Fraenkel had made the assertion, drawn from personal observations, that there is no coincidence of lymphoid hypertrophy and the high palatal arch. While many of us are inclined to doubt that the relation of cause and effect is always from the adenoid to the narrow jaw, few, I imagine, will doubt their frequent coincidence. A paper by Alkan in the *Archiv für Laryngologie* (Vol. X, No. 3) tends to refute not only Fraenkel's

assumption as to their non-coincidence, but fails to confirm the results attained by him and by Grossheintz in their measurements. The latter observers failed to take into account the factor of palate length in their measurements. Alkan shows that this is an important consideration. Although there is not much variation in the indices of height and breadth at different ages, the skull markedly lengthens after birth and the antero-posterior measurement of the hard palate increases with age in a much greater ratio than the breadth. He states that apparently the infant has a broad, low palatal arch, but this appears to be so because it is a short one. This being so it follows that where measurements of length enter as factors in the investigations careful note must be taken of the age, and adults separated from children. The knowledge of this fact also should cause us to distrust our clinical impressions, unsupported as they usually are by actual measurement.

Alkan, as has been said, asserts that the adenoid palate is a long, narrow, high one. As to the cause of this, incidentally he quotes the recent work of Danziger, which I have not seen, who advances the opinion that the irregularity in the development of the skull is due to ossification of the coronary suture. Alkan himself accepts the theory of the lateral pressure of the cheeks and their muscular fibres dragging on the external borders of the alveolar arch when the mouth is habitually open on account of nasal occlusion. In addition to the drag on the lateral alveolar borders, the retraction of the upper lip induces prognathism by taking pressure off the anterior incisors. If we are to accept the adenoid as the primary or the antecedent link in the chain this is the most plausible of all the explanations advanced to account for the coincidence of the narrow arch and lymphoid hypertrophy. When one remembers what the dental surgeon can do with even the adult jaw, by very gentle but long-continued exertion of force on the teeth, this explanation becomes very convincing, but clinical experience and our knowledge of anthropometry does not allow us to regard this sequence as obtaining in all cases. The long, narrow, high arch does sometimes exist without mouth-breathing. It cannot be explained by saying that it is the result of pre-existing adenoids in each case, which have atrophied, for it is not infrequently observed in children in the most striking and convincing manner, and we cannot entirely disregard the conclusions reached by the other observers, whom I quoted in the paper referred to, and who assert the coincidence of the high arch with leptoprosopia and

dolicho-cephalic skulls. In his conclusions Alkan asserts that the shape of the hard palate, so far as its height is concerned, has nothing to do with the configuration of the skull, a proposition which, so far as I am able to understand him, he does not at all satisfactorily establish in his argument.

The discrepancy between the results arrived at by these observers is very marked. Aside entirely from the question in this particular instance, as to which set of figures is the more accurate, comes up a very important and a very ancient question, a question which underlies many such discrepancies, *i. e.*, the reliability of human observations. Is it more or less fallible than human ratiocination? It may at once be said that, so far as the observations go which lie well within the scope of the five senses, we have no other criteria we are willing to rely on, however faulty they may be. When, however, we come down to a point within the variation of the individual index, they are much more untrustworthy than careful deductive reasoning, and many a positive assertion of the existence of fact we flatly refuse to believe, aside entirely from the question of veracity. Now, the most pressing necessity for the recognition of this lies in the fact that in the present state of scientific labor observers are so eager, observations are so acute, and alas! alack! ratiocination is so weak and puerile, and so discredited, that we are continually meeting, and with ever-increasing frequency, just such minor discrepancies in observation, which lead to major discrepancies in inductive conclusions, as is here instanced. Now, the mere mechanical measurement of the dimensions of the palatal arch by even such earnest, honest, painstaking observers as these gentlemen, opens an opportunity for wide variations in the individual index when it comes to the fixing of a few millimeters on a scale. In his address before the late International Congress at Paris, the father of Modern Pathology laid great stress on this objectivity in scientific research, but if Rudolf Virchow had not throughout his long life been in possession of a higher faculty than the power of accurate observation the scientific position of modern medicine would be many years behind its present one. The gift of the power of direct reasoning and of a vivid imagination are attributes of the human mind which belong to a higher grade of evolution and are much more rare than the ability to accurately catalogue phenomena. In every great library there are thousands of tons of facts mouldering and useless on the shelves because no mind has arisen in fifty years which can shape them into a comprehensive and systematic law. Since Virchow's "Cellular Pathology"

no biological law of wide-reaching importance has been formulated in medicine. Details in enormous amount have been worked out, and mountains of new facts have been piled up, but Darwin and Virchow did their life-work fifty years ago. They have had no successors. It is high time some of the energy and heart-breaking toil expended in collecting facts should be turned to better advantage in collating them.

Edmund Wertheim (*Arch. f. Lar.*, Vol. xi, No. 2, 1900) continues the study of accessory sinus disease, chiefly from the standpoint of post-mortem examinations. Such a flood of light has already been cast upon the subject in this way that one would think such an exhaustiveness of detail as is displayed in this paper of sixty pages is largely superfluous. Indeed, its chief merit is the confirmation and support it lends to the work of previous observers, whose work has been exhaustively reviewed in these papers, consequently only a few of the points will be noted here. The material examined reached the enormous total of 400 subjects. One notes with some surprise that the decade most subject to sinus disease is the second. Between the years of ten and twenty sinus disease is present in 35.5 per cent of all cases coming to autopsy. Combined sinus empyema, *i. e.*, the existence of purulent disease in two or more of the sinuses was present in 28.1 per cent of all the cases in which it existed at all. In 38.7 per cent of all cases of maxillary empyema both cavities were affected. This double coincidence, singular to say, was less marked in the other sinuses. About half of these double cases were in persons who had died of some infectious disease. About half of all the cases of acute disease of all kinds had pus or other inflammatory products in the accessory sinuses, croupous pneumonia leading the list. Nearly one-third of all the cases dead of phthisis pulmonalis had sinus trouble. He fails, as have the other observers, to find any satisfactory anatomical proof of the sinus origin of ozena. It seems to be frequently accompanied by sinus suppuration, but the data point directly to the conclusion that the ozena is the antecedent and the empyema the resultant when they co-exist. This is well illustrated in the paper of Ricard (*Rev. hebdomadaire de Laryng.*, No. 38, 1900), who reports the cure of a frontal sinus suppuration complicating an ozena case, without affecting the symptoms of the latter disease. Apparently when they co-exist the sinus secretion is frankly purulent and not ozenatous in the majority of the cases. Garel (*Rev. hebdomadaire de Laryng.*, No. 23, 1900) believes that acute suppuration of the accessory sinuses is the rule in the great majority of

the severe attacks of coryza. While, of course, it is the rule that these attacks mostly subside of themselves, the statistics of Wertheim and others show that apparently a large proportion of them become chronic, without recognizable symptoms. Wertheim disapproves of attempts to irrigate the sinuses by intranasal manœuvres in acute purulent attacks as more likely to superinduce a chronic suppuration than to cure an acute one. Nevertheless, it is reasonable to suppose that intelligent treatment of acute coryza, directed to cleaning away the secretions and diminishing the intranasal congestion of the nasal chambers proper, would prevent many a case of acute sinusitis from becoming chronic and many a case of chronic latent sinusitis from developing the troublesome symptoms and sequelæ of profuse suppuration of the cavities. However this may be, Wertheim draws the conclusion, which seems unavoidable from his own as well as from the experience of others, that the vast majority of these cases carry the purulent condition without suffering from the symptoms of septic absorption or other inconvenience. He remarks upon the extremely few cases of cerebral or meningeal infection resulting from these frequent foci for infection.

The fallacy most liable to be overlooked in these post-mortem statistics is the very possible change immediately preceding death, which furnishes no true index of the condition in the average healthy man. A series of examinations of cases dying suddenly without antecedent illness is necessary to settle this point of natural doubt. Two years ago Dr. Noack (*Rev. hebdomadaire de Laryngologie*, No. 44, 1898) brought forward the subject of eversion of the laryngeal ventricles, apropos of a case occurring in the practice of Dr. Moure. On microscopic examination the tissue removed was found to consist of vascular and edematous hypertrophies. He reviews the few cases reported in laryngeal literature and quotes Moure's opinion to the effect that these cases are not eversions of the mucosa of the ventricles at all, but in reality are chronic inflammatory conditions of various kinds. Fraenkel¹ and Chiari² both came to this conclusion several years ago and demonstrated the proof of it very satisfactorily. Theoretically this explanation is very much more plausible than the old one of eversion. Many of these cases of a protusion of the hypertrophied mucosa from the ventricles subsequently turn out to be of a tuberculous nature, and this is one of the conditions which enters into the consideration of the differential diagnosis of intralaryngeal growths in which it is necessary to remove a piece for microscopic examina-

tion. As to this last point there have recently been some expressions of opinion by laryngologists which are interesting, but divergent. Dr. McKenzie (*N. Y. Med. Journ.*, Sept. 8, 1900) has lately taken the extreme stand that the removal of tissue from a suspected laryngeal cancer for diagnosis is inadmissible. The diagnosis should be made and the extralaryngeal operation should be performed without the diagnostic aid of the microscope, except as "a court of the very last resort." Notwithstanding contrary opinion, I believe there is much force in the reason he advances for this advice, viz., the liability of awakening a dormant growth into one of rapid malignancy, and one cannot too strongly urge the necessity of preparing a patient's mind for immediate external operation in case of a verdict of cancer. Unless the patient is resolved on this course it is best to leave the growth alone until time has made the clinical diagnosis. But I am sure that disasters of omission and commission would result in very many cases, were Dr. McKenzie's radical advice generally accepted. The microscope is not by any means "the court of last resort;" unfortunately it is a very fallible instrument and often in very fallible hands. It is worshipped and treated with contempt only by those unfamiliar with its limitations. Nevertheless, it is a valuable adjunct to the armamentarium of the diagnostician and is not to be lightly kicked into the trash heap. The danger of starting an invincible malignancy in a few days by nipping off a piece with the forceps is not to be compared for a moment with the danger of taking out a man's larynx for a papilloma or an ulcer, or even with the danger of waiting until a growth of doubtful malignancy becomes one of clinical demonstration. I think most of us will refuse absolutely to believe that in many of these incipient cases any laryngoscopist's diagnostic acumen may become so refined that it can be trusted unaided, not forgetting for a moment the skill which Dr. McKenzie and others of wide experience have acquired. As to this point there appears in the French *Archives Internationales de Laryngologie*, No. 4, 1900, a significant expression of Moritz Schmidt in his valuable discourse on the "Diagnosis of Laryngeal Cancer." There is no observer to whom laryngologists the world over will be more ready to bow than to this distinguished gentleman, and especially as to the subject matter of his paper. In direct contradistinction to Dr. McKenzie, he confesses: "But in all sincerity, it happens to me, from time to time, despite my experience of nearly forty years, that cases present themselves in which I am not able to assert the diagnosis of cancer in the larynx solely from the laryngoscopic ap-

pearance. * * * The most valuable means of diagnosis is the microscopic examination of a piece of the tumor, but it is necessary to remember that a positive result alone is of any value. * * * I am not able to say that I have personally seen the extraction of a piece cause any harm to the patient."

Out of his long experience he is able to cite 110 cases, and while there are many valuable hints in regard to differential diagnosis, most of them are, of course, fully appreciated by the laryngologist familiar with the subject. We may cite one or two remarks further. He makes the rather extreme statement that cancer never begins in the same place, as do those tumors of a benign nature, at the middle of the ligamentous portion of the vocal cord, but any tumor in an adult found in front of or behind this portion is to be looked on with some suspicion, except, of course, the pachydermia on the vocal processes. He instances a case supposed to be carcinomatous by him and syphilitic by Sir Felix Semon, which proved on microscopic examination to be typical tuberculosis, and he adds the further interesting information that a thyrotomy was done in the case and the man recovered completely and was still alive and in perfect health eight years afterward. He not only thus strongly urges the use of the microscope, but he also warns us against neglecting that other sheet anchor of diagnosis in these cases—anti-syphilitic treatment. In the emphasis which he lays upon these two points he is, I think, in accord with the general consensus of opinion of the observers of laryngeal disease. This opinion receives a notable support from Sir Felix Semon in his late paper on thyrotomy (*Lancet*, August 11, 1900), where he advises the removal of a piece for microscopical examination in suspected malignant disease. As to extralaryngeal operations for cancer Dr. McKenzie again takes somewhat extreme grounds, advising in nearly every case a total laryngectomy with a thorough search for extralaryngeal glandular involvement. This radical advice assumes its most serious aspect when taken in connection with his rejection of the microscope as a diagnostic adjuvant in many cases. His citation of the extensive procedure for operation on mammary cancer is not felicitous as a parallel for similar procedure as to the larynx. A woman may lose her breast at forty-five for a simple cyst, by the mistake of a surgeon, and not be greatly incommoded. She has little use for it except for cosmetic purposes, but when a man loses his larynx at forty-five for a papilloma it is another matter. Suicide has more than once, it is said, been the choice of the mutilated being who has survived this operation. While this latter

fact is no argument against the operation, and while I am a strong advocate of its justifiability in some cases, such an incident vividly marks the difference between the indications for laryngeal and mammary extirpation. A little adipose tissue and muscle, more or less, from the axillary and pectoral regions of a woman is not to be placed in the same category with the functional importance of the human larynx, and the surgeon is bound to save all he can with safety. Furthermore, the late stage of laryngeal cancer, at which lymph glands outside the cartilaginous box become involved, is again in sharp contrast to the early involvement of the axillary glands in cancer of the breast.

The "laissez faire" policy in those cases of cancer of the larynx which require total resection or nothing, I have had occasion more than once to criticise, but I am afraid that Dr. McKenzie's inclination to protest against errors at one extreme of the discussion has led him into indiscretions at the other.

In the paper referred to above, Semon speaks of having successfully operated on a case of laryngeal tuberculosis, by the external operation, but found that the wound became infected by the tuberculous process, which led to very serious annoyances, but was finally subdued. Notwithstanding these cases and those reported by Goris³, Massei⁴ is not a believer in the advisability of laryngotomy in tubercular cases, and tracheotomy he reserves for cases in which it is indicated for relief of the symptoms alone. The distinguished Italian laryngologist, who at first was very doubtful as to the curability of any form of laryngeal phthisis, makes the following acknowledgment of a change in his views, but as the sequel shows, the change is not of a radical nature: "From a sceptic I have become believer in the curability of laryngeal tuberculosis." He ascribes this change of opinion to the fact that in the first years of his experience he saw only advanced cases, and latterly he has seen them in the early stages when they more tractable. He believes, and it must be confessed, that though he has some support in the testimony of others he is bold to assert the belief without adducing better proof of it, that the infiltrated form of tubercular laryngitis is from infection carried by the blood and lymph vessels while the superficial ulceration is due to infection by surface inoculation. It is especially this latter form which he judges most amenable to treatment. After reviewing in a very deprecating sort of way the various medicinal measures resorted to by himself and others, he concludes: "In reality, despite the fame which surrounds them, it would be illusion to marshal these agents in the rank of

radical measures. Who is able to assert that in any given case one or the other will bear off the palm?" While he apparently has seen cases recover under treatment, as have all of us, and with many different methods of local treatment, it cannot be said that he is very enthusiastic about the efficiency of any one. "Recent progress has changed the physiognomy of tuberculosis in such a manner that it is not blasphemy to proclaim its curability; nevertheless we ourselves are not able to deny, that in spite of scientific achievement and of the means which it places at our disposal, we are too easily deceived and hasten to publish promising statistics, stopping short at the first stages. If this optimism is not entirely in accord with the truth, there nevertheless always remains, as a salutary encouragement, the existence of a modest figure of cures."

I have lately said too much on this subject to permit any further expression of personal opinion, and I simply transcribe Massei's remarks, which are always distinguished by caution and the evidences of careful thought. I may also refer to a recent contribution which may prove of value in the study of tubercular infection of the pharynx. D'Arrigo (*Centralbl. f. Bakt.*, Vol. xxviii, No. 16, 1900) has succeeded by improved technique in more readily demonstrating in the tissues the tubercle bacillus, which he has found in very much larger numbers in the cervical lymph glands, than I have hitherto seen noted. Possibly with improved technique many pathological facts will be brought to light as to the path of the tubercle bacillus, which are now enshrouded in mystery.

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RHEUMATIC FEVER IN RELATION TO THE THROAT.*

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Considerable interest attaches to the undoubted association between acute rheumatism and certain affections of the pharynx and larynx. In this country attention has been particularly directed to the subject since J. K. Fowler published the particulars of twenty cases of acute rheumatism ushered in by tonsillitis. The throat symptoms preceded the rheumatic attack by a few days, or even a month, and his statistics point to a history of throat symptoms in 80 per cent of cases of rheumatic fever.¹ In the first edition of his book, published in 1878, Lennox Browne insisted on the rheumatic diathesis being the principal etiological factor in quinsy.² In the last edition (1899) he states that although he has had reason to somewhat modify his views, he reiterates the opinion that the arthritic diathesis invariably exists in those patients who are subject to recurring attacks of acute tonsillitis. He traces this view of rheumatism as a cause of angina to Musgrave in 1710, Sauvage in 1771, and he discovers an allusion to it by John Ball in 1762.

We have thus brought before us two different, but not necessarily contradictory, points of view. The first is, that in a considerable number of cases of rheumatic fever the poison enters the system through the tonsil, the inflammation of which may be the earliest indication of the systemic affection. The second is that certain inflammations of the tonsil occur with greater frequency in patients with an arthritic diathesis. Each of these views is worthy of some consideration.

The tonsil has been well termed by Gerhardt a physiological wound—an opening into the system which, if not maintained in a healthy condition, may allow the passage of general infection. How true this may be is shown by Jessen, who has recorded four cases of serious general infection from the tonsils—acute articular rheumatism, acute pyemia, streptococcal and staphylococcal pneumonia. In spite of minute research, no other cause than an angina could be discovered for these infections; and, indeed, in two cases the tonsils appeared absolutely healthy, and it was only at the autopsy that in

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the interior of the tonsils were there found purulent foci capable of explaining the cause of the general infection.³

It might be well in connection with this subject to bear in mind two *chief functions of the tonsils*: 1. As part of the hemopoietic system they form young leucocytes, most of which pass into the circulation, while some escape on the free epithelial surface, where they may, perhaps, exercise some protective action. 2. They excrete old leucocytes, which probably carry off with them effete products. These two functions are most active in childhood and youth, when all the lymphatic organs are specially active, and when the thymus—a large blood-forming gland—is disappearing.⁴ Pluder maintains that while the whole mucous membrane has protective powers, the tonsils are its weakest point, and cannot even protect themselves, as shown by their liability to inflammation.

An acute and evanescent form of angina has been described by Trousseau in one of his lectures as preceding rheumatic fever and disappearing on the development of the articular symptoms.⁵

H. L. Wagner concludes that the rheumatic affections are produced by germs migrating from the tonsillar tissues into other parts of the body. He founds this opinion on the fact that he discovered the same micro-organisms (staphylococcus albus and aureus, Fraenkel's pneumococcus, etc.) not only in the diseased tonsil, but in the urine of nearly all the cases, and in two instances in the fluid withdrawn from the knee-joint. He records ten cases, and notes that the joints which are mostly in use are the ones generally affected; for instance, the arytenoid cartilages of the larynx of singers (five cases), the knee-joints of shoe dealers, owing to the constant kneeling posture (two cases), and the wrist joint of a violinist (one case) and bookkeepers (two cases).⁶

Groedel⁷ has observed twenty-one cases in which tonsillitis has been followed by rheumatic arthritis, this sequence being sometimes frequently repeated in the same patient. His view is that the tonsillitis is the local point of infection from which "point de départ" the cocci invade the organism and produce the symptoms of rheumatic arthritis. He carefully points out that for a tonsillitis to be followed by rheumatism there must exist a predisposition to this latter affection, otherwise the local tonsil affection might provoke disease of the kidneys or glands, or simply rheumatic-like pains in the back and limbs, or simply remain throughout a local disease of the tonsils.

The statistics of a Collective Investigation Committee⁸ show that of 665 patients there were 158 (24.12 per cent) who had previously

suffered from tonsillitis; twenty others had suffered from sore throat of uncertain nature. If these were added, the proportion would be 27.17 per cent.

In his Milroy Lectures, Newsholme expresses his view that it is probable that in rheumatic fever the specific infection enters the system at the tonsils or some other part of the naso-pharynx.⁹

The view that tonsillitis is often of rheumatic origin, and is the initial manifestation of acute rheumatism, if not the actual primary lesion, is endorsed by some observations of Bertram Abrahams.¹⁰ His conclusions are as follows:

1. The more common varieties of rheumatic sore throat fall into two main categories—faucial erythema, and tonsillitis proper.

2. Faucial erythema is more common in adults; rheumatic tonsillitis in children, in whom it usually assumes the follicular type, quinsy being more common in older subjects.

3. Faucial erythema is an initial manifestation of acute rheumatism; tonsillitis may be the initial primary lesion actual.

4. Many cases are now definitely on record in which endocarditis has followed a non-scarlatinal tonsillitis unaccompanied by joint pains. In numerous other instances the tonsillitis has immediately preceded an attack of arthritis or of chorea.

5. The presence of the same micro-organisms in the tonsils, joints, blood and urine is evidence in favor of the participation of pyogenic cocci in the etiology of rheumatism. The most common organisms were streptococci; more rarely staphylococci, and the Fraenkel-Weichselbaum diplococcus.

From these views it is evident that the author regards the tonsils as the port of entry of the rheumatic virus.

In a very full paper, in 1894, on the relation of sore throat and acute rheumatism, Buss¹¹ came to the conclusion that the throat is in many cases the site of the entrance of the rheumatic infection.

The observations of Poynton and Paine¹² carry these observations considerably further. In one case they found after death from rheumatic fever that both tonsils were large and inflamed, even although the illness had been one of long duration. Before death there had been an exacerbation of rheumatism, and this development of tonsillitis is known to occur not only at the commencement but also during the course of a prolonged rheumatic attack.

In another case they demonstrated that if certain diplococci are isolated from the throat during an attack of angina faucium in a patient with rheumatic fever, and then interjected intravenously into a rabbit, they will cause non-suppurative valvulitis and pericarditis.

CRITICISM OF THE TONSILLAR-INFECTION THEORY.

In a *Thèse de Paris* presented last year the view is taken by Emile Poingt that the *articular complications* which so frequently occur with tonsillitis *should not be confounded with essential acute rheumatism*. The occurrence of these complications is not in relation to the character of the tonsillitis; they are met with in any age, but most frequently in adult life. They may set in any time, from the first day of the sore throat up to the onset of convalescence, but as a rule they appear and disappear with the angina. The cause is microbial, the agents of the articular lesion being the same as those of the tonsillitis—streptococci, staphylococci, and pneumococci—which travel by the blood channels. In other cases the bacteriological examination is negative, and then we must attribute the complications to the toxins developed in the pharynx. Pathological changes are found in the loss of lustre in the synovial membrane of the joints, with more or less considerable serio-fibrinous exudation. In the suppurative arthritis there is loss of substance, false membrane, softening of the cartilages, and sero-purulent or purulent exudation. The arthritis of angina, according to Poingt, attacks numerous joints. The small joints or the knee are chiefly affected. With regard to treatment, he particularly insists on the uselessness of salicylate of soda, and the necessity of preventive treatment by rigorous antiseptics of the mouth.

Ruault is another observer who states that he has never been able to obtain from the administration of salicylate of soda in tonsillitis sufficient evidence to convince him that the treatment had any specific action, and that, consequently, its results pointed to the rheumatic nature of tonsillitis.¹³

Cobb,¹⁴ from a study of forty-four cases of peritonsillar abscesses, finds that no causative relation could be proved to exist between rheumatism and peritonsillar abscess.

RHEUMATIC FEVER A SEPTIC INFECTION FROM THROAT.

From a review of the subject by Emil Mayer¹⁵ he comes to the conclusion that an endocarditis following tonsillitis is not necessarily to be looked upon as rheumatic, but it is rather due to an infection by bacteria gaining access to the body through the tonsils, or to the toxins of such bacteria. He quotes several instances, and gives a list of diseased condition which may be found to follow anginas.

TONSILLITIS AS A RHEUMATIC MANIFESTATION.

It is difficult to determine whether tonsillitis or pharyngitis can occur as an isolated rheumatic manifestation. Haig-Brown obtained

a rheumatic history in seventy-six out of 119 cases of sore throat. A. E. Garrod studied 169 cases of pharyngitis and tonsillitis and showed that there was something to suggest a possible rheumatic origin in about one-third of the cases of each variety—that is to say, in this proportion of cases there was either a family or a personal history of rheumatic fever.¹⁶ The writer adds that probably the proportion of one-third is considerably above the truth, and in this surmise he is no doubt perfectly right, for the progress of laryngology in the last decade has tended to show that a large number of cases of pharyngitis are secondary to purulent affections of the nose or catarrhal conditions of the stomach.

W. B. Cheadle observes that the view that in certain cases tonsillitis is a minor expression of the rheumatic diathesis cannot be seriously disputed; indeed, he regards rheumatism as a frequent, potent, and well-established cause of tonsillitis.¹⁷

CRITICISM OF THE RHEUMATIC-TONSILLITIS THEORY.

On the other hand, G. B. Hope¹⁸ is disposed to *question the theory*, now so universally agreed to, that amygdalitis is chiefly predisposed to by a rheumatic diathesis. Although he has had a sufficient number of cases of acute angina examined independently by advocates of the rheumatic theory, the results have been altogether negative. He also points out that it is rare to meet with examples of recurring angina in those who carry recent, or present unmistakable, evidence of a rheumatic attack. In addition, it is noteworthy that intrinsically the tonsil in later life becomes less and less subject to inflammation, notwithstanding that the gouty age is more confirmed. Then peritonsillar abscess is clearly of infectious origin, and to a similar cause is probably due the inflammation of the tonsils which may follow intranasal operations. If, therefore, observes Dr. Hope, remedies addressed to the rheumatic diathesis are given in either of the two latter instances, the administration must be either erroneous in its practice or must be understood to act independently and by methods not distinctly stated. In fact, he claims that treatment by anti-rheumatic remedies does not abbreviate the ordinary course—natural course—of an ordinarily severe amygdalitis.

That salicylate of soda is not a specific against tonsillitis is shown in a paper I wrote in 1884,¹⁹ in which reference is made to a patient who had been relieved of rheumatic fever. Six days after admission to the hospital he was free from pain and fever, but was still taking 20 grains of salicylate three times a day. Although under the influence of the drug, he developed acute tonsillitis and a temperature of 103.6°.

ROUTE OF TONSILLAR INFECTION.

For the present the question may be left out of discussion as to whether the "open door" of infection is through the points denuded of epithelium²⁰ or not through the visible superficial parts and follicles but through the interfollicular spaces²¹; or, finally, not through the tonsil proper at all but by way of the supra-tonsillar fossa.²²

CONCLUSIONS.

The foregoing pages indicate that there is a general acceptance of the view that an undoubted association exists between rheumatism and tonsillitis. This is expressed from two points of view: one is that the rheumatic poison enters the system through the tonsil, the inflammation of which is the first local expression of the disease; the other view is that tonsillitis is, in certain cases, one of the rheumatic manifestations of the rheumatic diathesis. These views are supported by numerous observations, of which I do not pretend to have given more than a selection. Many of the clinical records are too fragmentary to advance the subject, and it seems to me that the various theories which have been propounded are somewhat premature, and that it is much safer to await further pathological investigation to show which of our clinical deductions are trustworthy.

Further knowledge is required as to the nature of rheumatism itself, and also as to the various causes and forms of tonsillitis associated with it. So far peritonsillar abscess, or quinsy, is one form which is not accepted as commonly of a rheumatic nature. It is not mentioned by Fowler or Mantle,²³ and Hingston Fox²⁴ excludes it as a rheumatic disease. Trousseau does not particularly refer to tonsillitis as a forerunner of rheumatic fever, but to an evanescent form of sore throat. Evidently the subject will bear closer investigation.

The present state of our knowledge on the relation of tonsillar affections to rheumatism might be summarized as follows:

1. It is undoubted that a certain number of cases of acute rheumatism are preceded by an angina in a proportion varying from thirty to eighty per cent.
2. Both rheumatism and angina have many etiological points in common—season of year, cold, wet, fatigue, depression, vitiated air, etc.
3. The connection of angina and rheumatism, though undoubted in a number of cases, is not yet clearly established.
4. The tonsil may be the port of entry of the rheumatic virus, and this even although the naked-eye appearance of the throat gives no indication of its being affected.

5. The particular affection of the throat which is associated with rheumatism is not yet established. Apparently it is not peritonsillar abscess (quinsy).

6. Peritonsillar inflammation does not appear to be arrested by the administration of anti-rheumatic remedies. Many cases of parenchymatous and lacunar tonsillitis, on the contrary, are considerably benefitted by the administration of salicine or salicylate of soda. That this action proves the rheumatic nature of the disease cannot yet be accepted.

7. The question requires further research in two directions: One in differentiating the various forms of angina, and settling the one which is associated with rheumatism; the other in further research to discover the true nature of rheumatism.

THE PHARYNX.

The Naso-pharynx.—De Havilland Hall²⁵ has seen cases in which the pharyngeal tonsil (Luschka's tonsil) was affected independently of the faucial tonsils, and in which the pain and distress were much greater than is usual in ordinary tonsillitis. He believes that in some of these cases the rheumatic poison is the cause of the affection.

The Oro-pharynx.—In the more acute cases of rheumatic pharyngitis, according to Watson Williams,²⁶ the soft palate, especially toward the free margin, the pillars of the tonsils fauces, the tonsils and posterior pharyngeal wall will be found somewhat swollen and heightened in color, and in some cases the uvula is edematous and distinctly swollen. There are, however, no characteristic features which help us, by inspection only, to recognize the rheumatic nature of these throat symptoms; the diagnosis is founded on the pain, stiffness and inflammation in the throat preceding, accompanying, or following a rheumatic attack.²⁷

Benign ulcers in the pharynx have been seen by Freudenthal, who states that he is unable to interpret their etiology in any other way except that they are due to rheumatism. He refers to similar cases observed by Thorner, Heryng and Westbrook. The condition cannot be common, and, until our knowledge of rheumatism is further advanced, it must surely be difficult to differentiate these rheumatic ulcerations from the more common infective ones.²⁸

Granular pharyngitis is claimed by Marage²⁹ in many cases to be simply a manifestation of the hyperacidity which is characteristic of "arthritis." It is somewhat difficult to appreciate what French authors mean by this "diathesis," which is so frequently referred to in their writings.

THE NOSE AND RHEUMATIC INFECTION.

It is well known to laryngologists that operations on the nose are sometimes followed by attacks of tonsillitis. The observations on the sequence of these two facts are now sufficiently numerous to establish them as cause and effect. A case recorded by Kronenberg³⁰ is interesting as showing that a nasal operation may be followed by acute rheumatism. He operated on a patient with a cold snare for a papillomatous growth of one inferior turbinal. This was followed by an angina, which ran a favorable course. A month later the same procedure was carried out on the other nostril. Six days later the patient had a rigor, next days the knees, ankles, elbows and shoulders were swollen and painful; no sore throat; no discomfort in the nose. Swelling, pain and fever disappeared with salicylate of soda. Shortly afterwards there was a relapse, with heart complications, and the patient died.

THE LARYNX.

The localization of acute inflammation in the crico-arytenoid joint is a well-established affection. It may precede a generalized attack of acute rheumatic fever, and until the symptoms of the latter appear the diagnosis is sometimes difficult: it may occur during the course of the acute illness; and it may be met with as an independent affection. The patient generally complains of some pain and dysphagia, with tenderness on palpating the region of the crico-arytenoid joint—*i. e.*, the outer and upper border of the thyroid cartilage. The pain is worse when the patient is recumbent, particularly if he swallows in that position. Inspection with the laryngoscope may reveal nothing in the early stages, or until the soft parts over the articulation have become inflamed, when they may be seen to be red and swollen. The movement of the vocal cord on the same side is at first sluggish, and is said by some to be jerky. With the development of inflammation or effusion into the joint the vocal cord on the same side becomes fixed. We are then met with the difficulty of diagnosing between a rheumatic crico-arytenoid inflammation, and paralysis of the recurrent laryngeal nerve. In many cases the following symptoms, tabulated by Escat,³¹ will help in distinguishing the two conditions: Acute inflammation of the crico-arytenoid articulation may be diagnosed from recurrent paralysis by the following signs: 1. Dysphagia. 2. Painful cough. 3. Occasional tumefaction over the arytenoid. 4. Sharp pain on pressure along the posterior border of the thyroid cartilage. 5. The healthy arytenoid is not tilted forward on to the affected one, and (according to Grabower) the healthy vocal cord does not during adduction pass across the median line towards the other side.

In addition, this affection of the crico-arytenoid joint is usually associated with (*a*) the existence or pre-existence of an acute pharyngeal catarrh; (*b*) laryngeal hyperemia; (*c*) a more or less pronounced feverish condition; and (*d*) extra-laryngeal manifestations of arthritis.

When recovery takes place more or less permanent disturbance of movement may remain in the form of partial or complete ankylosis. The difficulty of diagnosis of this condition is analogous to that which we should experience in distinguishing between an ankylosis of the shoulder joint and a paralysis of the deltoid, if we were not able to manipulate the patient's arm. It can often only be made when the vocal cord is fixed in a position which is atypical of nervous or muscular palsy. Permanent thickening, in addition to the abnormal fixation, would be suggestive of periarthritic inflammation. As a rule it is safer to carefully exclude the possibility of any central or peripheral paralysis before ascribing the fixation of a vocal cord to complete ankylosis of the crico-arytenoid articulation. Even then other causes, such as syphilis, have to be carefully excluded.

The treatment of this rheumatic ankylosis is generally hopeless.

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SPONGIFYING OF THE LABYRINTH.

BY J. HOLINGER, M.D., CHICAGO, ILL.

The shortest descriptive name for the clinical picture of spongyfying of the labyrinth is "progressive deafness." This definition describes the most striking part of the picture, but it is neither complete nor exclusive. It is not complete because there are a number of other symptoms which are often associated with the deafness, viz., tinnitus, dizziness, fullness in the head. It is not exclusive because there are other diseases of the ear which apparently are identical, and only a careful examination, in which repeated functional tests are the main feature, can show the difference.

The fact that fixation of the stirrup will cause deafness was known in the last century. Yet the diagnosis on the living was attempted first by Prof. Bezold only fifteen years ago, when he read a paper on "*An Attempt to Explain the Condition of Air and Bone Conduction in Rinne's Test, with One Post-mortem.*" A great deal of criticism was passed upon this paper, but at the same time it caused much thorough investigation by Katz, Habermann, Scheibe, Politzer and others. I do not care to describe every phase of the controversies, which were not always within the boundaries of strictly scientific argument. They filled otological literature for nearly a score of years. I simply state the fact that the cases are becoming more numerous every year where a diagnosis of fixation of the stirrup by spongyfying of the labyrinth has been made in the living and has been confirmed sometimes ten and fifteen years later by post-mortem.

The question arises: How is the diagnosis "spongyfying of the labyrinth" made during life? Bezold, in Munich, and Siebenmann, in Basel, were the most efficient investigators of this affection, and since I was the latter's assistant in 1891 to 1892 I desire to describe the course of examination of the patient as we made it.

First, of course, the history was taken.

Then the condition of the drum-head was ascertained. If pus or wax, etc., obstructed the view it was removed with warm boric acid solution and a syringe. A short test of hearing for whisper was made.

The nose, naso-pharynx and pharynx were then examined. The middle ear was inflated. The result of the inflation was controlled either with the otoscope or, after inflation, with the ear-speculum by the changed condition of the membrane. In cases where repeated inflation was unsuccessful a catheter was used. After this the distance at which whispers were heard was accurately ascertained. Rinne's test was made and Schwabach's or Weber-Schwabach's test followed with an A tuning-fork. Finally the hearing for the highest and lowest sounds was tested with the Galton whistle and the A tuning-fork with several sets of movable weights. This whole course was repeated several days or weeks later in order to ascertain whether or not these findings remained the same. At my visit last summer I found that no changes had been made in this procedure with the exception that the continuous "Ton-reihe" of Bezold-Edelmann's tuning-forks and whistles were inserted in the programme. The whole examination ought not take more than twenty to twenty-five minutes.

The diagnosis is made from a combination of all the factors. The history has the following characteristic points: The patient has noticed that he is growing more and more deaf for months or even years. Exceptionally a sudden increase of the deafness is noticed. Loud conversation is usually understood; rarely the deafness goes beyond that. In two-thirds to three-fourths of the cases subjective noises are noticed. These noises may be continuous or interrupted by heavy detonations like pistol or cannon shots. The continuous noises are described as singing, ringing, sizzling, roaring, squeaking, etc. Several cases of suicide have been reported on account of these noises, which would not allow the patient to work by day or sleep at night. Dizziness was noted in about one-tenth of the cases. Pain was found in a great number and was occasionally described as a periodical, acute, piercing pain in the ear which disappeared after a while. Oftener, almost always, numbness and dullness in the head were complained of, or, as the patients said, it felt like having a band around the head. The results of the examination are in sharp contrast to this grave history. In most of the cases the middle ear is normal as far as we are able to see with the speculum. The Eustachian tube is open. The nose and naso-pharynx show little or no change, and treatment of these organs is of little or no avail. In some cases a hyperemia of the promontory and margin of the membrana tympani is seen. The promontory looks like a red area shining through the membrana tympani, especially around the umbo and

the posterior half. Small changes, like cloudiness or slight retraction of the membrane, are not infrequent, but do not justify any conclusions. Inflation of the middle ear has little or no influence on the deafness. The diagnosis must be mainly based upon the functional tests. Besides deafness there are three characteristic symptoms: First, Rinné's test is negative or shorter than normal; second, bone conduction for the lower sounds is increased, and, thirdly, a larger or smaller part of the lowest sounds cannot be heard at all by air conduction. This picture is sometimes not quite clear, which makes the diagnosis more difficult. Combinations of several morbid conditions may be present. The continuous "Ton-reihe" of Bezold will be of great help in these cases.

I will not or cannot enter into the discussions about dysacusis, etc., because they can only be discussed in presence of a practical case. Theorizing will lead us astray.

The differential diagnosis between spongyfying of the labyrinth and some diseases of the middle ear, however, must be entered upon. The following diseases may come in question: otitis media simplex and affections of the Eustachian tubes. Starting with the latter, it is interesting to note that the results of functional tests are identical. How is that possible? Similar conditions have similar consequences. In both the stirrup is fixed in the oval window. In ankylosis the fixation is due to new formed, spongy bone. In the occlusion of the tube it is the air pressure which makes the stirrup immovable in the oval window. While, however, the functional tests are identical, the visual examination easily reveals the difference.

In ankylosis, as above stated, the appearance of the drum membrane is normal and is not changed after inflation of the middle ear, while the membrane in affection of the tubes is retracted before inflation, and normal after. At the same time the functional tests show a very marked improvement. From simple chronic otitis media, ankylosis is differentiated by Rinné's test and by the examination of the lowest sounds. While they show characteristic changes in spongyfying, they are normal in the other condition.

To the clinical picture must be added that spongyfying usually starts at about eighteen to twenty or twenty-three years of age. The increase of the deafness is either slow and steady or at times there are sudden turns for the worse, or finally there are cases where the deafness sets in suddenly. At the age of twenty-eight to thirty the condition is usually fully developed, and remains unchanged often to the oldest age. Some patients may then have so much hearing left that they can follow a conversation, others a loud

conversation, others may be "stone" deaf. It often occurred to me that those cases which were treated most persistently showed finally the worst function. Whether rest, away from the noise of the great city, will not benefit the patient more than pneumo-massage and Politzer bag, catheter and pressure probe, will have to be decided in future by very careful and persistent functional tests. I might give some histories of patients where I made a very early diagnosis and advised the patient to keep away from all treatment and especially the noise of the great city, and found them several years later in a comparatively tolerable condition, while others who have been treated for years with all skill and perseverance were found at the examination with a much worse hearing and besides they had lost their courage, their hopes and their money. Yet two or three cases cannot count against such a universal fad as pneumo-massage, which has undoubtedly good immediate effects in this condition as in many others. A reliable differential diagnosis will allow us in future to compare the results of treatment. As long as several pathologic conditions are promiscuously described under the name of sclerosis, progress is not possible. The *prognosis* and *treatment* may be best explained by referring to the *pathology* of the condition. Here is a short abstract of a paper which I read before the Chicago Pathologic Society two months ago: The bony capsule of the labyrinth has its permanent size as well as its permanent structure in the new born. The capsule of the labyrinth is finished at a very early stage of life. In this early, I might almost say hasty, finishing, sometimes little pieces of the embryonal cartilage are included in the capsule. Those remnants of embryonal cartilage at a later stage in life, between eighteen and thirty, at the completion of the general growth of the body, begin to ossify, yet not in the normal way, into compact, but into spongy bone. This process does not stop at the limit of those remnants of cartilage, nor at the normal limits of the capsule of the labyrinth, but overreaches other parts. It enters into the interior of the labyrinth on one side and into the middle ear on the other. It overleaps the oval and the round window, and meets the stirrup, thus fixing it. These remnants of cartilage have been repeatedly found by Professor Siebenmann. Some of them were several millimeters in diameter and, exceptionally though, visible to the naked eye. They were mostly located in the neighborhood of the oval window. Other parts of the capsule may become involved either by extension of the first focus or by developing separate foci, which are independent of each other, and may be spread over the whole labyrinth two, three and more in number.

The name of ankylosis of the stirrup would not cover the pathology, nor the clinical picture, and the somewhat uncommon expression is *spongyfying of the labyrinth* has been selected by Siebenmann.

It is not the purpose of this paper to exhaust the subject. All that is intended is to show:

First.—Sclerosis and similar words to indicate this disease of the ear are without meaning, pathologically or clinically.

Second.—Spongyfying of the labyrinth is a well-defined disease, clinically and pathologically.

Third.—The diagnosis can be made in the living in a comparatively early state, from the history and the trio of functional tests:

(a) Short or negative Rinné.

(b) Increase in hearing of low sounds (A) by bone conduction.

(c) A large part, one to several octaves, of the lowest sounds cannot be heard by air conduction.

Fourth.—The prognosis as to life is good; as to recovery of hearing bad.

Fifth.—The treatment must be applied very judiciously. We can judge of and compare the effect of a treatment in a given disease only when we are able to make an absolute diagnosis of the disease. Patients who have been treated from the start of the disease are often, after years, in a worse condition as to their hearing than others who have been left alone.

Schiller Building.

IMPROVEMENTS IN EAR SPECULA.

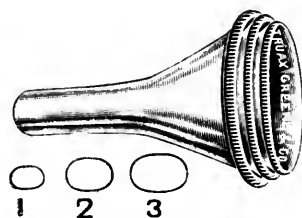
BY S. S. BISHOP, M.D., CHICAGO, ILL.

The ear specula represented in the accompanying figure were designed by the writer a considerable time ago, and have been in constant use long enough to demonstrate some decidedly superior qualities. They are much less cumbrous than the ordinary funnels, and the danger of injuring the drumhead is reduced to the minimum.

They are made in three sizes, the smallest being 25 millimeters long (about one inch), and the largest 28 millimeters long (about 1 1/8 inch). The interior is oxidized to prevent the reflection of light into the surgeon's eyes. In order to make them conform to the shape of the auditory canal the distal end is made oval. The

funnel end is milled in order to prevent it from slipping from one's fingers, and its shortness and lightness render it less liable to fall from the ear. The cylindrical section bears such a relation to the conical portion as to guard against its insertion far enough to injure the drumhead.

In experimenting with different metals for ear specula I found aluminum too weak and brittle. It bends out of shape and breaks too easily. The funnels made of brass and plated with silver are the most satisfactory, even preferable to solid silver. They are light and firm. These specula can be inserted far enough to slip within the anti-helix, which holds them from falling out of the ear in many cases.



Bishop's Ear Specula.

Some of the funnels in use are very much longer than is necessary, and their insertion endangers the integrity of the membrana tympani. There are others that are too heavy and slippery and they will not remain in position during examinations, treatments and operations. Others do not conform to the contour of the meatus, being circular throughout. The pigment used to blacken the interior of the funnels in common use is destroyed and removed by the cleansing and disinfecting or sterilizing processes. These specula, being oxidized, can be subjected to the action of strong carbolic acid solutions, boiling, etc., without injury.

They have proved so satisfactory in several particulars of importance in actual practice that it seems worth while to make their merits known. Truax, Greene & Company are the manufacturers.

SARCOMA OF THE NASO-PHARYNX, WITH REPORT OF CASES.*

BY JOHN O. M'REYNOLDS, B.S., M.D., DALLAS, TEXAS.

The literature on the subject of sarcoma of the naso-pharynx embraces a description of a comparatively small number of cases and the work of compilation has already been accomplished by better hands than mine. And my purpose in this brief paper is simply to contribute additional cases to the list now on record. Bosworth gives the notes on the nineteen cases which he has found in literature and in his own practice. Sir Morell Mackenzie speaks of "the extremely small number of recorded cases" without referring to any in his own experience. Wright, in the "American Text-Book," refers to the cases collected by Bosworth up to 1892, and states that since then several others have been reported. Seiler does not treat of the subject at all. Bishop deals with these growths very briefly and says that they are of very rare occurrence, and many other authors devote a very limited space to the affection and fail to indicate its degree of frequency. So it appears that a more thorough knowledge of the characteristics, management and termination of this affection would be possible if we could draw our conclusions from a larger number of cases carefully observed. And I regret to confess that personally I have failed to keep complete records of the cases that have come under my care and I can only hope to give the salient features that have fastened themselves in my memory. And if the fellows of this society will only report their experience with this trouble I feel that the literature on the subject will be at least three times as extensive as it now is, and our ability to successfully deal with the malady might also be materially increased.

Case I.—Mr. M. J. M., a young merchant of Dallas, twenty years old, of the Hebrew race, came to me in 1899 with a history of having recently lost free nasal respiration, especially on the left side, which was completely occluded. The examination of the naso-pharynx revealed a smooth, rounded, purple tumor about the size of a small walnut, which, on palpation with the finger, was firm, practically immovable, and attached to the body of the

* Presented to the American Laryngological, Rhinological and Otological Society, Philadelphia, Pa.

sphenoid bone. On account of its non-pedunculated character and its situation it was necessary to hold the strong wire loop persistently about the base of the tumor while my assistant tightened the wire around the growth. After the wire had cut its way deeply into the tissues the resistance became so great that it required the combined strength of two men to sever the growth from its attachment. And as all of the tumor was not included in the loop at first, another portion was amputated in the way just described and finally the base curetted down to the bone, and the wound treated in accordance with the indications. Several sections of the tumor were made by Dr. Allen J. Smith, of the University of Texas. The more superficial sections showed a pure fibroma, but as the sections went deeper the sarcomatous elements appeared and then became more pronounced until the diagnosis of fibro-sarcoma was clearly established. I show to you the slides prepared from this specimen that you may examine for yourselves. Up to the present time there has been not the slightest evidence of recurrence and the nasal respiration remains unimpaired.

Case II.—Mrs. R., of Ennis, Texas, an old lady of seventy years, and of previous good health, consulted me with regard to a rapidly-growing tumor in the naso-pharynx completely occluding both nostrils posteriorly and extending far down into the oro-pharynx. She was suffering very intense pain in the head due to the pressure of the growth on the surrounding structures. So with the aid of her family physician, Dr. G. M. Hackler, and my assistant, Dr. D. E. Seay, I removed as much of the tumor as could be safely done without endangering her life from direct invasion of vital parts. Our object was only to secure temporary relief, as there was no possibility of removing all the tumor, which was a rapidly-growing soft sarcoma and terminated fatally after a few weeks from further extension of the growth.

Case III.—This patient I saw several years ago in consultation with another physician, but I regret to say that I do not possess complete notes relating to this case. At the time I saw him the sarcoma had filled the naso-pharynx, had involved both ears, had partially locked the jaws so that the patient could not open widely the mouth, and had extended to the external tissues of the neck to such a degree that the circumference of the neck measured twenty-one inches.

Case IV.—On account of the omission of a microscopical examination, I am not positive whether this case should be classed as a fibroma or a fibro-sarcoma. But it is possible for one type to merge by insensible gradation into the other type, and as they clinically sometimes very much resemble each other, I will report this case in this connection and leave its exact classification to your superior skill.

The patient, Miss M., was a young girl about fifteen years old when she was referred to me by her family physician, Dr. J. C. Loggins, of Ennis, Texas, on account of a large tumor growing in the naso-pharynx. Examination showed the presence of a firm sessile mass attached to the body of the sphenoid bone and the basilar process of the occipital bone. The growth was removed very much after the manner described in considering Case No. 1 of Mr. M. J. M., and the tissues were so tough that when the cold wire was thrown around the growth it could not be severed by the combined efforts of two men, and after these measures were continued for more than an hour, the electro-cautery wire was thrown around the growth at the constriction made by the cold wire and thus the tumor was removed. Since that time, which was six years ago, I have twice had occasion to remove naso-pharyngeal growths from this same patient, but the neoplasms seem to have become softer in character, and there is evidently a transition in type, but with a prospect for complete recovery.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting November 28, 1900.

Wendell C. Phillips, M.D., Chairman.

Bilateral Bony Cyst of the Middle Turbinate.

DR. FRANCIS J. QUINLAN presented a bony cyst that he had removed, with others, from the middle turbinate of a man of about fifty years of age. They showed a well marked concavity on one surface, and were almost as hard as ivory. There was no polypoid tissue in the center, but a few drops of serous fluid had escaped. The patient complained of constant headache, lachrymation, faulty concentration and insomnia at times. These symptoms were all relieved by the operative procedures.

Case of Rhino-Scleroma.

DR. H. JARECKY presented this case, which, he said, would be better described as scleroma of the respiratory passages, though custom had sanctioned the other appellation. The patient was thirty-two years old, a native of Russia and residing in the United States for eleven years. Parents died while she was yet a child, so that nothing is known of them, and one sister is living in good health. She has always been well and has been married fourteen years, having six healthy children, ranging from ten months to thirteen years old, and no miscarriages. About four years ago she went to the Polyclinic for slight pain in throat, for which a mouth-wash was prescribed. For past nine months she experienced some difficulty in breathing, which has been gradually getting worse, and for which she sought treatment.

Upon examination he found the nose the seat of atrophic rhinitis. In the mouth bands of connective tissue passed backwards to the palate from back part of gums. The tonsils and uvula were missing. From right posterior pillar a small sessile growth, size of a hazelnut, drooped into the rhino-pharynx. This was snared off. Dr. Beaman Douglass, pathologist at the Manhattan Eye and Ear Hospital, reported it to be atrophied tonsillar tissue. None of the Mickulicz cells, or bacteria peculiar to rhino-scleroma, were found in

this growth, and now another piece of tissue from pharynx is under examination. Posterior rhinoscopy showed cicatricial bands extending from posterior pillars to lateral walls of pharynx. The epiglottis was found to be atrophied and folded upon itself so that on the under surface the right and left halves were in apposition. Of the larynx the stenosis was so marked that no view could be obtained.

In arriving at a diagnosis many things had to be considered. Syphilis was excluded by antisyphilitic treatment, absence of pain during disease, number of healthy children, no loss of tissue in the scars, and by there being no lymph glands enlarged.

Tuberculosis was excluded by absence of constitutional symptoms, no broken-down necrotic tissue, which would appear in a disease extended over such a period; lupus, by freedom of pain and ulceration, and burns from caustic, by history.

The laryngeal stenosis was treated with Schroetter's intubation tubes with relief to the patient.

DR. W. FREUDENTHAL agreed with the speaker that such a case should not be called rhino-scleroma. He had examined this woman quite thoroughly, and the case reminded him clinically very much of a specific lesion. His own case of rhino-scleroma had no uvula, and the absence of uvula does not exclude syphilis.

DR. BEAMAN DOUGLASS said that he had examined a piece of tissue, and it had proved to be a fragment of the tonsil. The piece recently removed from the pharynx was so superficial that he doubted if the result of the examination would prove anything. He was of the opinion that a syphilitic process which had extended so far would have been accompanied by necrosis of the cartilages. Moreover, the woman had been on mixed treatment and on large doses of the iodides without benefit.

DR. JONATHAN WRIGHT said that the appearance of this case seemed to him highly characteristic of syphilis. He never would have thought of this case being a rhino-scleroma, although, it was true, he had had little or no experience with that condition. The long duration would, of course, rather point away from syphilis, but such prolonged cases were occasionally seen. Some years ago he had seen one of these cases, which had been supposed to be lupus, and had been treated for a year or two without benefit. Finding that the case did not react to tuberculin, the iodides had been given and pushed more vigorously than before, and in about six weeks the case had fully recovered. The case under discussion presented principally scar tissue, and hence very little benefit from anti-syphilitic treatment was to be expected.

DR. EMIL MAYER said that he understood this woman had received mixed treatment for only two weeks, and that the iodide of potassium had not been well borne. This was not a fair test as to its syphilitic nature. He had been quite surprised to hear one speaker say that we would invariably find necrosis in such a case if syphilitic, and he would like to know how it could be said, under the conditions present, no view of the larynx being possible, that necrosis was or was not present. He had himself seen cases of syphilis which had lasted for a number of years, and yet there had been absolutely no necrosis of the cartilage.

DR. JARECKY said if there had been any deep-seated necrosis of the cartilage present he thought difficulty would have been experienced in the use of the tubes. Again, there were no enlarged lymph nodes, and absolutely no scars on other parts of the body; hence he felt that it was perfectly justifiable to exclude syphilis.

Extra-Laryngeal Epithelioma.

DR. FRANCIS J. QUINLAN presented a case of extra-laryngeal growth which filled the right epiglottic fossa and was first observed one month ago. He had earache and painful deglutition, etc. There was a history of syphilis, and, although the growth resembled epithelioma, antisyphilitic treatment had been tried. No microscopical examination had yet been made. The man's condition remained about the same. Last July another case of cancer of larynx came to the St. Vincent's Hospital. It was a large pedunculated growth springing from internal surface of epiglottis and filling almost the entire cavity of the larynx. A very skilled microscopist of this city had previously declared this growth to be purely papillomatous. We removed the mass, and Drs. Jeffries and Dunham having examined it, had ratified the diagnosis of epithelioma. The recurrence had been very rapid. No doubt the case had originally presented all of the features of a benign lesion, and this emphasized the tendency of benign growths to degenerate into malignant ones. The man just presented had been a prize-fighter and had received an injury to the nose, which had been followed by suppuration; this would account for the septal perforation. The specific history dated back thirty years. He had a large family of healthy children. In the latter case there was no pain and of late few symptoms except a glottic spasm that appeared twice. The last time the man must have been alarmed, as soon after the surgeons at St. Luke's performed a partial laryngectomy, and, although the growth at the time of operation was fully the size of a walnut, there was no glandular involvement and the *general* condition of the patient excellent.

DR. J. WRIGHT remarked that the clinical appearance was that of an epithelioma, but there was a straight history of syphilis and of improvement under the use of iodide.

DR. R. C. MYLES said that such cases should be promptly treated, for more than once he had known a delay of a few months to prove fatal. A sufficiently large piece should be removed and examined microscopically, and then if the result justified it the operation should be done at once. The speaker said that some years ago he had described an instrument for removing such growths. When the disease was confined to the epiglottis, in the early stages, the epiglottis should be removed with this epiglottotome without further delay.

Angioma of the Septum.

DR. T. R. CHAMBERS presented a fireman, thirty-nine years of age, who had no personal or family history of tuberculosis or other constitutional dyscrasia. Four months ago the nose had begun to swell and run continuously, and two weeks ago bleeding from the left nostril had commenced, and had persisted since that time. Examination had revealed a large tumor of both sides of the septum, probably an angio-sarcoma. The tumor bled when touched lightly, and it extended backward about two inches. He purposed to anesthetize the patient and remove a portion of the growth. If it proved to be pure angioma he would then use the cautery or the cautery snare.

Report by DR. GEORGE E. McLAUGHLIN, pathologist of Christ Hospital, Jersey City:

This growth shows throughout its greater portion a characteristic adenomatous condition, with numerous glands lined with a single layer of cylindrical cells. At one portion of the periphery, as we follow the mucous surface of the growth, a marked differentiation of the tissue is noticed. This consists of glands, some much dilated, having several layers of lining cells, which cells have in some instances taken on a squamous type; the lumen of these glands being quite obliterated by this cellular proliferation.

In conjunction with this change, a moderately large infiltration of polymorphonuclear leucocytes (pus cells) is found.

Diagnosis—Adenoma. with evidences of probable early carcinomatous change.

Death of Dr. Rufus P. Lincoln.

The Chairman—It is my sad duty to announce to this Section the death of Dr. Rufus P. Lincoln yesterday as a result of an operation for appendicitis. Dr. Lincoln was the first chairman of this Section, and had stood in the front ranks of the work in laryngology and rhinology and diseases of the lungs these many years. It is a great loss to the fellows of the academy belonging to this section to be deprived of an associate who has been for so many years looked up to and considered one of our great leaders. His reputation is not merely local; it has extended all over the world.

It would seem to the chair a fitting thing that some recognition of these services be made, and that we should, in some way, put on record our own feelings. I hope that some one will be selected to read a short biography of Dr. Lincoln at the December meeting.

On motion of Dr. W. K. Simpson the Section unanimously requested the chairman to appoint some member of the Section to present such a biographical sketch at the December meeting. Dr. D. Bryson Delavan was selected for this duty.

Perforation of Septum Narium, from a Study of Twenty-five Cases, with Regard to Etiology and Pathological Significance.

DR. CHARLES W. RICHARDSON, of Washington, D. C., read this paper. He said that the perforations were usually single, and were round or oval in the cartilaginous septum, though irregular in outline if situated in the bony portion. The amount of incrustation depends upon the amount of ulceration and the condition of the mucosa. Perforations are not infrequent, and many are not detected during life. They are observed at all periods of life. The cases can be divided into two groups, viz.: (1) Those with a known etiological factor and definite pathological history, and (2) those with an unknown etiological factor and indefinite pathological history. In the first group were to be found those due to organic disease and trauma. The paper was more particularly directed to the latter, or idiopathic perforations. Lupus ulceration was extremely rare, and had only been seen in its earliest stages. Tuberculous ulcerations were also quite infrequent. The process began with the formation of a tubercular tumor or ulcer. Not only are the histological elements of the tuberculous lesion found, but often also the tubercle bacilli. There was no doubt that congenital defects might exist in the septum, as such cases had been reported. A large number of perforations of the septum arose during surgical intervention, but they usually gave rise to very little inconvenience unless there was

extensive destruction of the septum. He doubted very much the occurrence of perforations as a result of tumors. He had had eight cases of abscess of the cartilaginous septum, and they had all healed without perforation. Tuberculosis of the nasal mucous membrane seemed to be exceedingly rare; he had never seen a case of tuberculous involvement of the nose in his private practice, and many eminent observers had commented upon its rarity. He did not think a perforation of the septum should be considered as syphilitic unless the bone was also involved. Where the cartilaginous septum alone seems to be involved, there might be simultaneous involvement of the osseous septum, which might be very easily overlooked. Unfortunately most of these cases did not come under observation until extensive exfoliation had taken place, and considerable deformity had resulted. The percentage of syphilitic cases to all other causes was very great; in his own experience it had been 30%. There was no doubt that an average amount of scratching and boring could be applied to the healthy mucous membrane without giving rise to any permanent change though it was different if the mucous membrane is not healthy. Most of the theories which had been advanced claimed the lesion to be primarily due to a local vascular change. His own opinion was that the underlying predisposing cause was a destruction of the innervation of the cartilaginous septum whereby the resisting power of the structure is so diminished as to allow of ulceration and perforation. In a thorough study of seventeen non-tubercular and non-syphilitic perforations, the speaker said, eleven of these patients had either had tuberculosis or a strong tubercular history, and he had been forced to believe that there must be some etiological relationship. During an attack of typhus, typhoid, or of an acute exanthem, it was easy to understand that there might be a lowering of the general vitality and a lowered resistance of the septum. Of the series of twenty-five cases, eight had presented a clear syphilitic history; eight others had been due to serious constitutional diseases; in eleven there had been a tubercular diathesis; only six had given no such evidence.

DR. FREUDENTHAL mentioned among the traumatic causes the boring and picking with the finger, and considered this an important factor. He had seen cases in which perforations had developed almost under his eyes as a result of such traumatism. A case was recalled in which a man who was known to have the habit of boring the nose constantly with the little finger of the left hand had developed a perforation of the septum while under observation. This perforation was larger on the left side, and the tip of the little finger

exactly fitted it. The speaker said that he was under the impression that the majority of cases of tuberculosis with perforation of the septum had also atrophic rhinitis. The latter seemed to him to have probably been the result of picking and boring. The reason that Hajeck had so many tuberculous cases was that he worked in Weichselbaum's clinic where the cases were, for the most part, tuberculous.

DR. M. TOEPLITZ said that in 1888 he had seen a chemist who was not syphilitic and who was free from organic disease. A large perforation was present only in the cartilaginous septum. The speaker said that he had examined thirty-two of those working in this man's factory, which was one for the manufacture of Paris green. Every one of them had had a more or less marked perforation of the septum. After searching the literature he had found that the French had written on this subject many years ago, and had stated that the same thing had been noted among those working in mercury and in other chemicals.

DR. WRIGHT said that he was surprised to learn that such a large proportion of workers in arsenic were affected in this way. He thought the reader of the paper had laid a little too much stress upon the fact that perforation of the septum is found just as frequently in straight septa as in those which are deviated. This was explained by the fact that the deviation often disappears in the course of the morbid process because the deviated portion had been destroyed thereby. At the point of greatest deviation there is less nourishment of the cartilage or greater exposure to injury, and on that account perforation results at that point more commonly. The finger-nail was prone to cause the formation of an ulcer, and this ulceration was kept up by constant picking at the crust. This seemed a very reasonable cause, and one not sufficiently emphasized in the paper. While syphilitic perforations occur more often in the bone than in the cartilage, still there were not a few cases in which the syphilitic destruction is limited to the cartilage. A peculiar feature in these cases was the lack of deformity. The arch of the nose needs no support at its middle; the deformity only occurs in cases in which the nasal bones have been affected and the arch broken up. He recalled one case in which there had been neither cartilaginous or bony septum left, yet the nose had remained perfectly well formed. Dr. Wright said that he had had occasion at one time to examine twenty or thirty patients in a consumptive home and had found perforation of the septum in a number of them. The European literature was full of reports on tubercular

perforations and ulcers of the septum, yet it was much less commonly met with in this country.

DR. R. C. MYLES said that the closer the perforation is to the front the more discomfort and the greater the tenacious incrustations. This was on account of the gummy secretion that naturally forms at this point. He had followed one case of perforation from its inception. It occurred in a rosy-faced girl, and began as an ulcer which resisted his best efforts to heal it. His experience had been that there was a difference in the shape of the perforation in syphilitic and non-syphilitic cases. There was something in the lowered vitality of the mucosa, not only on the perforating side, but on the other side. The perforations presenting a thin edge seemed to give the least discomfort.

DR. J. F. MCKERNON said that in the past four years he had seen four cases of perforation of the nasal septum following epidemic influenza, and all of these patients had subsequently developed tuberculosis. He had seen three cases of perforation occurring in persons working in phosphorus in match factories. Quite recently he had seen three cases of perforation in which he had been able to find nothing but a disturbance of the heart and kidneys. In two of them the perforations had been distinctly spheroidal; in the other it was decidedly elongated.

DR. RICHARDSON said that Hajek referred to the fact that a large percentage of the bodies examined by him for ulceration had died of tuberculosis—forty-six per cent. In the fifty-four per cent of non-tubercular bodies he found the perforation only twice, and the forty-six per cent of tubercular bodies he had found the lesion thirty-one times. The cement workers and chromic workers in England also suffer from these perforations. Such perforations were traumatic rather than purely idiopathic.

The Pneumatic Sinuses of the Sphenoidal Wings.

DR. BEAMAN DOUGLASS read this paper. He said that the accessory air cells in the sphenoid bone had been described by Zuckerkandl, and it was on the suggestion of the latter, his highly revered teacher, that he had undertaken this detailed study of a new field. In early life the nasal mucous membrane pushes a projection into the sphenoid, and this enlarges and forms the sphenoidal sinus. The sphenoidal cavity eventually formed varies a good deal in size. In cases in which the sphenoidal cavity is small, the sphenoid may be made to contain more pneumatic room by the opposite cavity developing to an unusual size. He had investigated the

relations of the pneumatic cavities in the sphenoid in 200 cases. In 15.5% the great sphenoidal sinus did not extend to the wings of the sphenoid, but was confined entirely to the body. In all cases the sphenoidal wings contained pneumatic cells. In 3.5% the sinus could be distinguished in the small wing of the sphenoid. In 84.5% the great sphenoidal sinus extended into the small wing of the sphenoid. A series of photographs was presented to illustrate the differences in detail which had been observed in the course of this study. The relation of these sinuses of the small sphenoid wings were important. Anteriorly they lie in immediate relation with the posterior sphenoidal cell. The most important relations are on the outer wall over which runs the optic nerve. When this sinus is at all large it may have a very important relation with the carotid artery. The walls of the sinus are generally only half a millimeter thick. It was possible to have this cell diseased, and the disease persists even when the ethmoid cells in front are cured. This sinus would escape the curette if the usual measurements were followed. The clinician should remember that the relations of the posterior ethmoid cells, either with the sinus of the small wing or with the great sphenoidal sinus, makes it possible to open them from the posterior ethmoidal cell.

DR. EMIL MAYER said that this subject had received considerable attention from Dr. Cryer, of Philadelphia, who had prepared two papers and published them in the *Journal of the American Medical Association*, as also Dr. Schadle, of St. Paul, who had published a finely illustrated paper in the *St. Paul Medical Journal*.

In view of our recent advances in the line of diseases of the accessory sinuses the paper was exceedingly timely and gave food for much thought. Our knowledge, however, of sphenoidal disease is still limited and our ability to operate in this dangerous and obscure region still more so. He would hesitate to advise free curettage until we could by some means be fully able to know how far we might go without inflicting some serious injury and perhaps a fatal one.

DR. MYLES said that he had studied this subject quite extensively on the cadaver, but had not published his results, although he had frequently demonstrated them to students. His observations coincided approximately with those presented in this paper. It was easy to see how, by the irregularities in the bone formation, a case might be rendered either much simpler or much more difficult to treat.

MEETING OF THE CHICAGO LARYNGOLOGICAL AND CLIMATOLOGICAL SOCIETY.

Held November 15, 1900.

REPORTED BY EDWIN PYNCHON, M.D.

The President, Dr. T. Melville Hardie, in the chair.

DR. HARDIE exhibited a case of presumable specific ulceration of the nasal septum which had just come under his care, the patient being a woman *æt.* forty. The history given was that six months ago the uterus had been extirpated for cancer and that one month thereafter she had injured the bridge of the nose, which was the beginning of the present trouble. The patient previously had one miscarriage and had also given birth to one puny child, who died shortly thereafter.

DR. HOLINGER reported a similar case in which the nasal manifestation did not yield to potassium iodide, even though administered in heroic doses, but did respond quickly to mercuric iodide.

DR. OTTO T. FREER presented a paper entitled

Intratracheal Thyroid Tissue

Which contained the report of a case, being a woman *æt.* thirty-two. A careful consideration of the anatomy of the thyroid gland was given. In cases of enlargement this gland grows by the addition of cells to its periphery. When extension through and into the trachea takes place it is often complicated by goitre. The protrusion in the trachea may extend down as far as the fourth tracheal ring. It was originally thought that such extension consisted of an accessory thyroid gland, though this has been disproven. The intratracheal extension is usually unilateral, though in the case reported it extended all around the tracheal ring. Monopolar electrolysis was used without inconvenience, though two days thereafter the tissue became so much swollen that a hasty tracheotomy had to be done. Electrolysis was again used without benefit. Some of the growth was removed through the tracheotomy wound for microscopic examination by which the diagnosis was corroborated. The microscopic slides were exhibited. The case was discussed by Drs. Holinger and Casselberry.

DR. GEORGE E. SHAMBAUGH reported a case of

Spindle Cell Sarcoma

Located at the base of the tongue in a male patient thirty-eight years old, it being of the size of a hen's egg and somewhat lobulated. This paper was discussed by Drs. Freer, Stein and Holinger.

DR. J. HOMER COULTER read a paper entitled

Tuberculosis of the Larynx and Its Treatment by Pure Guaiacol.

In laryngeal tuberculosis medical treatment is more to be advised than surgical, especially when pulmonary involvement is recognized. Primary laryngeal tuberculosis is undoubtedly at times met with. The bacilli are generally found only in the deep scrapings. The essayist believes that the accompanying pain in the ear is almost invariably due to the abnormal condition of the tonsils. Probably at least thirty per cent of all cases of pulmonary tuberculosis have laryngeal complication.

In the treatment by guaiacol he begins with a twenty per cent solution, and in ten days or two weeks often uses it full strength. When local anesthesia is required he employs a weak solution of holocain with antipyrin, which has been his favorite local anesthetic for the past two years in all intranasal and laryngeal work, and during which time he has not used over five grains of cocaine. In the use of guaiacol no unfavorable reaction has been observed.

This paper was discussed by Drs. Klebs, Casselberry, Thomas and Pierce. Dr. Pierce reported very favorable results from the use of a mixture of equal parts of lactic acid and oil of cloves to which is added a sufficient amount of acetic ether to clear.

DR. JOHN A. ROMSON next read a paper entitled

Sea Voyages—Their Effects and the Cases they Improve.

The essayist regards sea air as being both sedative and tonic. It is furthermore more aseptic than land air, as it is constantly moving, and has more ozone and less dust, and is additionally more humid through the constant evaporation of the sea water. A preference was expressed for the long cruise on the sailing vessel of bygone years. The paper was discussed by Dr. Klebs.

DR. ARNOLD C. KLEBS next read the closing paper,

The Home Treatment of Tuberculosis,

In which was questioned the advisability of sending patients away to a foreign place, after the return from which they have to again

become acclimated to their home climate. On the contrary, it is better to select a country residence with a large porch which can be protected. The patient should occupy a large and sunny room. The diet should always be changed when indigestion appears. Thin underwear should be worn though the outer clothing must be heavy and warm. An open air régime is to be particularly prescribed.

DR. HOMER THOMAS approved of the home treatment in combination with the use of medicated nebulæ by the inhalation of which pulmonary zymonastics and deep respiration are secured, thereby arresting the development of the bacilli.

DRS. ROBISON and BABCOCK both indorsed the writer's views.

In closing the discussion Dr. Klebs added that his custom, when sending a patient away for his health, is to always insist that he must put himself under the care of a good local physician.

BRITISH MEDICAL ASSOCIATION.

Sixty-Eighth Annual Meeting, Ipswich, July 31, August 1-3, 1900.

SECTION OF LARYNGOLOGY AND OTOTOLOGY.

(Proceedings Concluded from Page 434.)

The Vocal Resonator—WILLIAM A. AIKIN, M.D. (London).

There can be no doubt that much time might be saved if those who occupy themselves with the physiological problems of the voice would limit their remarks to facts capable of demonstration. For this reason alone I would attempt to do so in this paper, but I have also the conviction that much good may be done from the side of laryngology by simply investigating and noting the functions of the vocal organs as they really are without reference to the theories and conjectures which choke the discussion of the subject.

To review the whole voice would take too long. I confine myself here to a part of it only—that concerned in the pronunciation of language.

Anatomically the organ which I wish to call the resonator is a tube or series of cavities extending from the vocal cords to the lips and nostrils. It has a posterior or inferior portion which is vertical, corresponding to the cavities of the larynx and pharynx, and its shape in the individual is influenced by the erect position of the neck, the expansion of the chest and the position of the base of the tongue. The upper or front portion corresponding with the cavity of the mouth is horizontal. Its shape and capacity depend upon the positions of the tongue, lips, palate and jaw. The nasal cavity above this is movable only near its posterior orifice, which is regulated by the soft palate. The nose is concerned in producing certain nasal consonants and some nasal vowels in foreign languages, and must be considered as an accessory cavity. It is in the mouth that all the movements of pronunciation take place.

The resonator owes its effect upon the voice to the cavities it encloses. This applies especially to the vowel sounds. The consonants may be regarded acoustically as the noises occasioned by various methods of approaching and departing from the vowels.

According to the position the resonator assumes its contained cavities are capable of emitting certain resonances, or rather groups of resonant notes, when the air is agitated within them.

When the resonator is still and the breath passes through it, as in whispering, the resonant notes of the cavity are heard alone. Similarly when the vocal cords vibrate the same vowel sound is heard with it, so long as the position of the resonator is maintained. A scale of two octaves may be formed by the cords, but the vowel sound continues the same upon any note. The vocal note can have no influence upon the vowel sound, and we are therefore justified in regarding it as a group of resonant notes belonging to the resonator added to the vocal note. The difference between the whispered vowel and sung or spoken vowel being that in one case the agitation is brought about by the rushing of expired air through the glottis, and in the other by the passage through the cavities of the vocal vibrations. The vowel vibrations are mixed in their nature, having besides their primary note many overtones or harmonics. As we shall presently see, the resonant notes of the cavities are altogether above the pitch of a man's vocal notes, and only in quite the upper ones of a woman's. The vowel resonances must be awakened by different harmonies of the vocal notes in the scale, but that they are awakened we hear clearly enough.

The determination of the vowel depends upon the cavity of the mouth, influenced by the movements of lips, tongue, palate and jaw, but its sonority depends upon the dimensions of the cavity and the share in the resonance taken by the rest of the resonator.

In all examples the Italian pronunciation of the vowels are used exclusively. U (oo) O (or) A (ah) E (eh) I (ee). Thus A requires little more than an open mouth to be recognized as A, but to be a richly sonorous A it requires all the resonance it can get out of the entire resonator at its soundest and fullest. All the vowel sounds can be closely studied in the whispering voice, for then only the resonant notes are heard.

We must remember this about resonators in general. The pitch of their note depends upon their size, the clearness upon their smoothness and roundness. Constrictions break up their vibrations into fractional waves or destroy them altogether. The effect of one resonant cavity upon another neighboring one is but imperfectly understood.

The resonances of U, O, A, E, I, when whispered, have been observed by most of the great physiologists.

We will make no use of artificial resonators which might lead us into error, but simply examine with the ear. Our object is to make the most of the resonator we possess, on well-known acoustic principles. I suggest the following as a good position for A.: The

jaw is open about one inch between the teeth. The lips are at rest upon the teeth. The tongue lies flat on the floor of the mouth, with its margin against the lower teeth. The palate is raised enough to prevent the sound being nasal. The head is erect, and the whole chest, especially the lower ribs, expanded.

In this position a good resonant note is heard in whispering in my own voice it is C'', and a tuning-fork of that pitch powerfully excites the resonance of the cavity.

Examining this position, the whole resonator appears to be dilated to the full extent without undue strain, but the narrow place, between the base of the tongue and the cervical vertebræ, is a definite division of the resonator into its two anatomical positions. The resonance C'' belongs to the almost spherical cavity of the mouth, for if I introduce the fork into the pharynx the resonance is again excited. This must suggest the presence of a node at the opening of the mouth into the pharynx. Whether the same resonant note belongs also to the lower portion I am as yet unable to say. The superimposition of one resonant cavity above another is not yet clearly worked out by the physicists, but when two cavities of the same or some related resonance are combined, they reinforce one another. Anyhow, when the whole resonator is dilated, the resonant note C'' is very distinctly heard in my own voice.

This is a point of some importance because every one who whispers A will not have the same resonant note for it. If the directions are closely followed there will be found to exist differences among men or women of a few semi tones only, and between men and women of a few tones. Men will vary within the range of from b^b to d''. Women between d'' and f'' or g''. The difference between man and woman is on an average about a minor third, say for example, c'' and e^b.

These differences are due entirely to differences of growth in size of our resonant cavities. I have called this the basic resonance (=the best possible for A) as all the other vowels are found by variation from it. It is the normal resonance of the tube the variation of which enables us to pronounce language. When A is once fixed the other vowels are formed by the movements either of the lips or tongue. By diminishing the buccal orifice with the lips to about one-fourth its former diameter, the resonance assumes a hollow character and its note falls about a fifth. The acoustic effect is that of the vowel U.

It is convenient that U should be a fifth lower than A, as there are three kinds of O between them, each with its degree of closure

of the lips. They are the round O as in *owe*, the open O as in *or* (= Italian O), the short O as in *hot*. When the jaw remains open and the change is made entirely with the lips, these vowels have for their resonances the first five notes of a scale, which I number I-V.

	I	II	III	IV	V
	U	Ō	Ö	Ö	A
Example :	Who	owe	or	on	are

The closure of the orifice is not the only factor in the lowering of the resonances, at the same time the corners of the mouth come forwards and slightly elongate the tube, also the larynx is slightly depressed, which elongates the resonator at the other end. In pronouncing U the base of the tongue rises slightly. These movements tend either to make the resonance lower, or to promote the equality of the two parts of the resonator.

The other vowels require the turning of the mouth upwards. When the jaw remains open and the lips stationary, the whole change is effected by the movement upwards and forwards of the dorsum of the tongue. Its tip remains behind the front lower teeth, but the middle of the tongue rises into a broad ridge which, by the time its lateral margins have reached the upper back teeth, raises the resonant pitch of the mouth cavity as much as a whole sixth. At the same time the posterior segment behind the ridge has become much larger, and its pitch has fallen to a major third lower than the note we heard for A. This position belongs to the vowel E, and it is of great acoustical interest that the resonances for the front and back segments are an octave apart.

By raising the tongue still more, all else remaining the same, the front resonance rise a third higher, that is to say, the octave of A and the back resonance falls to the fifth below A. This is a suitable position for the vowel I, and its front and back resonances stand in the relation to one another of a twelfth. I am not pretending that these related resonances are essential to the pronunciation of E and I; I only wish to emphasize the acoustical advantages of such an arrangement.

I has the highest resonance of any of the vowels, and all the vowel sounds therefore possess resonances intermediate between U and I. The former is a fifth below and the latter an octave above the basic resonance of A. So we obtain a scale of twelve notes within the limits of which all the vowel sounds in language must arrange themselves.

This is the resonator scale, which is shown on the accompanying table. Every vowel sound has there its place. I am aware that the places I have given to some of the rather indefinite sounds between A and E may be open to doubt, but believe that the sounds E and I in all languages are fixed upon X and XII, and that the related double resonances play an important part in the pure tone of those vowels. The short *i* on XI has a double resonance a tenth apart, and the short *e* IX has a back resonance, but I find it difficult to catch, although I believe it to be on the sixth below the front resonance—that is, in the above scale on *b*. It must not be forgotten that the one condition upon which all this depends is the maintenance of the open jaw.

The Italian masters taught it, and the Italian language requires much opening of the mouth. I do not wish to insist upon the per-

The C'' Resonator Scale.

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Italian.	U		O		A				e	E	I	I
French.	ouo	—	môrto	bôcca	acqua	fine	—	—	bella	bône	to	to
German.	oo	au (ou)	or (aj)	butte en	ame ad	halla uo	jé in	j VIII j III heure	elle	est (si me) uoe }	il	vit
English.	Muth	Notb	Wort	Wonne	Rath	Mann	Liebe Werde bôre }	Werth	Bett Hühne }	weh	will	wie
	who	owe	or	on	ari	A(love) up	earth her	air	eod	aim	ill	eat

formance of these resonances at all times in speaking or in singing, but I believe that when it is required of anyone to make the most of his resonator, he can do so by following the acoustical scheme I have described. One thing I have been struck by, and that is that by practising these resonances in the whispering voice the strength and tone of the singing and speaking voice will greatly improve. Whether the cavities increase in size I have not been able to measure, but the resonances have a tendency to get lower and clearer.

I need hardly mention the great saving of the vocal cords caused by improved resonance. I am convinced that fewer voices would be ruined if more attention were paid to this part of the subject. In the first place we should do our part, and set forth in physiological books what the true principles of the vocal instruments are, so that those concerned may make them the foundation of their teaching.

A Case of Bezold's Complication of Suppurative Mastoiditis—**ERNEST WAGGETT—(London).**

This case is presented, not for its rarity, but because the physical signs are not usually recognized until the disease is well established. Male, thirty, presented himself March 9th for a seeming simple muco-purulent discharge of three months' standing. Membrane was incised, and Politzerization advised to his attendant. Patient returned in twenty days complaining of slight pain in mastoid, though no evidences of mastoid disease were present. Twenty-four hours later slight edema and tenderness were detected over an area the size of a threepenny piece corresponding with the exit of the mastoid vein from the bone. Slight fever present. Mastoid percussion negative. Next day a distinct swelling was present behind the ramus of the jaw, and an adenitis was suspected, secondary to the surgical interference with the membrana. During the three following days the infra-auricular swelling became pronounced and red, as seen in suppurative adenitis of children. Next day seemed sick while viewing the perforation, pressure was made on the swelling, with the result that pus spurted out, leaving no doubt of the diagnosis.

It is important to keep an eye on the drumhead for pus may be made to well up out of the meatus only in young children, where an external collection of pus communicates with the lumen of the meatus through a dehiscence in the floor of the latter. Because of the short history and low-lying position of the perforation a simple Schwartze was done, as more likely to spare the contents of the tympanum. The abscess cavity was not longer than a filbert. Within a month the cavity produced by so extensive a removal of bone had healed by granulation and skinned over, and except for a scar the ear is now none the worse for its operation and disease. In these days of radicalism in surgery it is just as well to note that the hearing was normal on the tenth day, as also the membrane in appearance. The movements of the head were little affected by the removal of the sterno-cleido insertion.

The case raises the following points as worthy of discussion:

1. The advisability of Politzerization in muco-purulent otorrhea.
2. The escape of pus into the digastric groove in absence of necrosis.
3. Edema and tenderness at posterior extremity of digastric groove simulating phlebitis of emissary vein.

4. The simulation of infra-auricular adenitis.
5. The necessity of observing the perforation while making pressure.
6. The question of the duration and degree of the external pressure to be exercised.

† **On the Surgical Treatment of Certain Forms of Nasal Insufficiency.**—L. HEMINGTON PEGLER, (London.)

By the term "nasal insufficiency" I wish to imply a continuous or intermittent inability to breathe satisfactorily through the nose, varying in degree from a comparatively slight inconvenience to anything short of actual obstruction.

Coming now to discuss the causative factors of nasal insufficiency, and commencing with the vestibules, one thinks first of the congenitally narrow orifice and of collapse of the ala nasi (for which Roe has a special operation), but I pass over these in order to particularize a form of encroachment upon the lumen of the vestibule depending on an abnormal condition of the opposite, namely, the internal wall. I refer to displacement outwards from the middle line, of the mesial crus of the lower lateral cartilage, or "cartilage of the aperture." There is usually, but not necessarily, a corresponding displacement of the lower border of the anterior extremity of the triangular cartilage of the septum, accompanied by a sigmoid distortion of the columella. This is a defect of considerable importance, for it frequently reduces the nostril to a mere slit, which practically closes altogether on drawing in the breath, not to mention the fact that it is an unquestionable disfigurement. The removal of this anomaly is a little troublesome, but the result fully repays all the pains that are taken over it. After first ascertaining whether the lower border of the septum participates in the obstruction, and to what extent it does so, by projecting it as a thin white line from the opposite nostril, I commenced the operation by subcutaneously injecting a few minims of freshly-made solution of cocaine, containing one-sixth of a grain, into the cellular layer between the cartilage and the skin. This anesthetizes the part, helps to minimize the bleeding and raises the bulla, which, when an incision is made through it, greatly assists in exposing the underlying dislocated crus. The patient being placed upon an operating couch, a free incision is now carried over the prominence through the entire length of the columella parallel with its free border, but not too close to it for esthetic reasons. The skin is then dissected

up in two flaps, one above and another below, and the displaced cartilage exposed. In order to excise this to the required extent, I get an assistant to project it for me the whole time by introducing his index finger into the opposite nostril. The bleeding is usually very troublesome, but dabbing with small pledgets of cotton wool, moistened with suprarenal capsule or a weak solution of cocaine, helps to control this, whilst at the same time maintaining the anesthesia. The cartilage, being seized with forceps, is snipped off with curved scissors up to a point in the anterior angle well in front of the prominence. The septal cartilage, as I have said, often participates, and when this is the case the assistant projects it in a similar manner whilst holding the upper flap aloof with forceps; the free lower edge of the septum is then shaved off with a sharp tenotomy knife; to do this smoothly and evenly, and without cutting the flaps or injuring the lining of the opposite nostril, requires a great deal of care. As regards the amount of cartilage to be removed, I have found myself more liable to err on the side of insufficient excision. When the flaps are allowed to fall back in their places, unless the prominence has been very slight, it is usually necessary to snip away neatly a small portion of the upper one, or some disfigurement through bulging of the redundant tissue will remain; the edges then come together very satisfactorily and leave no scar; sutures are quite invisible.

The vestibule may be occluded by the triangular cartilage alone, every gradation being encountered from slight to severe degrees of encroachment; slight degrees with eversion of the lower border much resemble the condition just described. In severe forms it will generally be found that the obtruded body is the extremity of a sigmoid curvature of the septum in the horizontal plane. This should be sliced off with a sharp knife, sufficient being taken to clear the nostril without injury to the mucous surface of the opposite side. No flaps are necessary in this case.

In studying the causes of nasal insufficiency located in the mucous chambers posterior to the vestibule, we find they are of such a nature as to admit of a classification of our cases in two main divisions:

1. Those in which the bony nasal fossæ are of normal width, or even slightly in excess of this, the obstructing elements consisting in a hypertrophic condition of the inferior turbinate or its mucous investment, or, in fact, of the mucous membrane or any portion of the air-way.

2. Those in which the nasal fossæ are structurally narrow (an independent source of insufficiency in itself), or, being narrowish, are rendered inefficient by slight or extensive departures from the normal in either wall, but almost invariably and of necessity in the septal. These two classes, though clearly distinguishable in the main, pass into each other by insensible gradations, so that, of course, no hard or fast line can be drawn between them.

There is also the very frequent unilateral or mixed case, in which the two conditions occur in the same individual, an encroachment upon one chamber by the septum, giving rise to abnormal roominess in the opposite one, which, in its turn, is perhaps partly stenosed by compensatory hypertrophy of its inferior or even middle turbinal, or both.

I notice that a recent author denies the enlargement of the bony framework of the inferior turbinal. This is quite contrary to my belief, but I think it is important to note that in the narrow class of nose that body is usually ill-developed, just as sometimes one finds it actually pinned close to the outer wall by the pressure of a septal spur.

1. The treatment of the roomy class of nose in a state of insufficiency need not detain me long because it practically resolves itself into that of so-called hypertrophic rhinitis in some form or another. Furthermore, it is one that is not usually confronted with much difficulty, and I only pause to insist that the surgeon should be careful not to err by doing too much; it is the broad and easy way! It was, I believe, for the treatment of this condition that Carmalt Jones invented his spoke-shave; but it is just the one for which I never use the instrument myself, and, judging from past experience, I rather question the advisability in these cases of applying any cutting instrument to the turbinal body at all. One not infrequently hears a man boast nowadays that he scarcely ever uses the electro-cautery in a nose from one year's end to another, and without doubt this agent has been a great deal misused, but here is a condition in which I think it ought to find a legitimate application. The process of reduction by cauterization is slow perhaps, and a patient may have to run three or four or more times at considerable intervals, seeing that some space must elapse before the lately-inflamed surface can be anesthetized again with cocaine or its substitutes and the clearing up completed, but, on the other hand, we have no troublesome granulations to get rid of, by subsequent cauterizations the nervous patient is spared a great deal of mental perturbation by the bloodless character of the procedure, and I think the result is permanent if

the searings have been thorough; I prefer to make them on the surface. If, on the other hand, partial turbinectomy is performed, to say nothing of complete ablation, there may follow in due course that unaccountable change in the character, consistence and amount of the mucous secretion, with a general state of matters somewhat corresponding to that described originally by Greville Macdonald under the title of "turbinal collapse," and for which there seems to be no satisfactory and permanent remedy.

Not infrequently in the roomy division obstruction is augmented by hyperplasia of the erectile tissue of the floor of the meatus or of the septum, and I have had an opportunity of drawing the attention of members at a former meeting to the occurrence of what may be termed septal tonsils consisting of definitely shaped outgrowth of the lymphoid elements of the septal mucous membrane, projecting as tumors from near the free border of the vomer into the nasopharynx. The erectile hyperplasia usually occur in the region of the so-called "tubercle of the septum," a body which I think might much more aptly be termed the cushion or pulvinus, to save misconception, considering that though not an anatomical constant it is always when present a soft diffuse swelling and never either nodular or tuberculous in character. All these protrusions are best shaved off with a sharp knife such as one or other of those I use. In doing so it is very important not to leave an elevated border or crater-like surface, as adhesions will afterwards bridge across from this to the opposite wall close to the receding anterior angle of the roof of the nose where they are particularly troublesome to extirpate.

2. In entering upon the question how best to deal with the various factors of insufficiency in the contracted nasal chamber, I think one is met by one of the more difficult problems of surgery; no two cases are ever seen alike, so that no very definite rules of treatment can be laid down, and a lengthened experience is the only reliable guide. The various curves and deflections of the septum, in the horizontal, vertical or oblique plane, the length and position of spurs or projections, whether buttress-like or sutural, hard or soft, must then be accurately determined, together with the all-important point as to the presence of thickening or redundancy of the septal wall in addition to deflection. I use a long, blunt-pointed, bayonet-handled probe for this purpose, straight or slightly-bent close to the tip and need hardly add that a brilliant illumination and well-elevated seat are essential adjuvants. Passing over those comparatively simple cases I come, then, to that almost equally frequent source of insufficiency in which a structurally contracted nasal

chamber is still further stenosed by a deflection of the septal wall most commonly in the vertical, but perhaps also in the horizontal, plane, narrowing up the main respiratory channel in one or more situations to a very detrimental extent. The desideratum here being an increase in the capacity of the inferior meatus, the question is, Shall we attack the outer wall or both in succession? And in the latter case, which one first?

On the whole, I recommend operation upon the inferior turbinal in the first place as being the simpler procedure, and as enabling one to ascertain the condition of the septal wall and of the meatus generally, posterior to the ablated portion; there is also the chance that as sometimes happens the posterior two-thirds or so of the meatus may prove to be considerably less contracted than the anterior, thus rendering further measures less urgent. This is the class of case in which the spokeshave may most legitimately be employed, and I know that many surgeons here perform complete or posterior turbinectomy as a routine treatment and make it suffice. It must however be conceded that spokeshaving an ill-developed turbinal with a taper posterior extremity is not always an easy matter, and unless the case is subsequently managed with extreme care I cannot think of anything more unfortunate than an incomplete operation of this kind in which the mucous membrane alone is shaved off and the bone left intact. Rightly or wrongly, but chiefly on these grounds have almost abandoned this method in favor of the more artistic one of partial turbinectomy already alluded to, and originally advised by my colleague, Richard Lake. The success of this operation depends very much upon the choice of instruments. Various forms of scissors are recommended by different surgeons, but nothing is more efficient and less likely to create disappointment than a pair of stout nasal shears. In operating they should be pressed close up to the junction of the inferior turbinal with the outer wall, and an incision made not less three-quarters of an inch in length. Sometimes the turbinate thins away anteriorly, but approximates the septum an inch back in the meatus; if so, the incision must be adapted to this circumstance. The first cut should be the final one whenever possible, followed by the immediate encirclement of the semi-detached fragment or "peninsula" with the snare, an attempt having been made to cut in obliquely with a view to a better shape of the stump. It is important to engage the loose piece in the loop of the snare without delay, and before the seat of operation is obscured by the free bleeding that generally follows. The narrower the chamber the more difficult anterior

turbineotomy becomes, especially in regard to the extraction of the fragment, and, of course, the less obliquity can be given to the incision. If free bleeding overtake us before the operation is completed, the chamber must be plugged with wool saturated with a thick solution of suprarenal capsule for a short space, after which the position of the loose piece can usually be ascertained. If for some reason the snare should not answer, Grünwald's invaluable conchotome must be our main dependence, and we proceed to remove the lost fragment piecemeal. When using the snare, the loop of wire must not be larger than necessary, it must be deftly applied, its farther extremity pointing outwards, and it must be pushed thoroughly home to the end of the incision before attempting to cut through. Lastly, if suitable punch forceps are not available, or fall in his hands, let me caution the inexperienced operator, as well for humanity's sake, against endeavoring to complete with the spokeshave (which can hardly be induced to engage a plain surface, as he will find), and on no account twist the piece off roughly with powerful forceps. The wiser course under these circumstances is to cleanse with an antiseptic or plug if need be, and leave the case for at least twenty-four hours, when hemorrhage having stopped and the parts settled down, the situation can be viewed and the operation concluded *secundum artem*. The second stage of the operation, as I am in the habit of performing it, consists in the insertion of a solid splint of soft rubber cut out of a square piece, and especially shaped to adapt it to the case in hand. This material was introduced a short time since, and is also a suggestion of Lake's. As soon as bleeding has been controlled, the splint may be introduced and the case left until sufficient time has elapsed to allow our judging as to the amount of space gained by the operation. The advantage of this indiarubber splinting is very great; it is absolutely nonabsorbent and therefore aseptic, and it can be easily taken out, cleansed, and replaced by the patient as often as necessary. Its reinsertion is not painful if the operation to widen the meatus has been rendered adequated by excising a sufficient length and proportion of the inferior turbinate, otherwise the tension is considerable and will cause headache. When the splint fits properly, patients make no great objection to wearing it for a very considerable time, and one great recommendation for this practice is the certain prevention of adhesions, the opposed surfaces being thereby kept apart till quite healed. During insertion the splint must be kept strictly parallel to the floor of the meatus, and must be long enough to extend beyond its narrowest point.

Under the gentle pressure thus occasioned, tags of mucous membrane and little rough prominences become absorbed and disappear, and a great deal of time and trouble in trimming up are saved during the after-treatment. If preferred, a moulded rubber splint can be obtained of definite form; these are supplied by the instrument makers in four different lengths, and vary in thickness from $\frac{1}{32}$ to $\frac{3}{32}$ of an inch, so that by their means the width of the narrowest part of the meatus can be engaged.

Having thus attempted to gain space by sacrificing the whole or a part of the inferior turbinate in a narrow chamber, any deflection of the septum can be dealt with or left, according to the exigencies of the case. A bony spur not hitherto visible may now possibly be detected posteriorly and removed, or a shaving of cartilage may be taken from the convexity of a slightly-deflected septum with a suitable knife, and thus a very fair amount of additional space obtained. It is in fact on the value of cutting operations upon the septum that I shall close this paper. It would be outside my purpose to discuss the surgery of extreme deviations of the septum, and I have to concede that when that body is deflected without any attendant thickening the knife or saw can only be used to a very limited extent; one or other of the cutting, *plus* forcible straightening operations on Asch's principle seems then to be the only alternative, though none of these have proved quite satisfactory in my hands.

The usual experience is, however, that some thickening or redundancy of the septal wall very frequently accompanies deflection

LARYNGOLOGICAL SOCIETY OF LONDON.

SIXTIETH ORDINARY MEETING, NOVEMBER 2, 1900.

F. DE HAVILLAND HALL, M.D., President, in the Chair.

The following cases and specimens were shown :

A Case of Mucous Polypus of Larynx.

Shown by MR. STEWART. A woman æt. seventy-eight, for eleven years has had catching of the breath when laughing, and for three years increasing hoarseness. Examination shows a mucous polypus occupying the whole of the right vocal cord. In my experience laryngeal mucous polypi are comparatively rare, and very rare in old people. They usually occur in middle life. Mackenzie in his book gives only one case over fifty, and that was in a woman aged seventy.

The PRESIDENT suggested the removal of the growth. It was a cyst and could be readily taken away.

MR. STEWART had suggested operation, but the patient said the tumor had been present from birth, and she would rather keep it.

Specimen of Cancer of the Esophagus, Causing Complete Laryngeal Paralysis.

Shown by MR. W. G. SPENCER. The patient from which the specimen was taken was admitted into hospital with rapidly progressive laryngeal dyspnea. It was difficult to examine the larynx on account of the dyspnea, and therefore no exact diagnosis could be made, but it was particularly noted that there was no dysphagia.

I explored the larynx by thyrotomy and found the left cord absolutely immobile and the right scarcely moving at all. The left vocal cord was completely removed and the patient recovered apparently well, his breathing being quite relieved. But soon after the wound had healed he developed a tracheo-esophageal fistula which was quickly fatal.

The specimen shows extensive epitheliomatous ulceration of the esophagus which has extended to the trachea and the glands so as to involve the recurrent laryngeal nerves. The position of the left vocal cord is occupied by a fine scar. The temporary relief to the patient was even more satisfactory than a tracheotomy could have been.

The PRESIDENT said that the case was originally under his care. The causation of the paralysis was extremely obscure, nothing definite being ascertainable. The operation of thyrotomy and excision of the vocal cord as performed by Mr. Spencer, though objected to in the past, certainly gave the patient considerable relief, and it was, perhaps, the best thing that could be done.

SIR FELIX SEMON said they all knew that in cases of thyrotomy for malignant disease when a vocal cord was removed a cicatricial band formed at the level where the vocal cord was removed. Under these circumstances the advantage of the operation so far as the relief to breathing was concerned seemed to him very doubtful. If the patient had lived a little longer than he did, one would have expected a recurrence of the stenosis to occur. This theoretical reasoning found a practical corroboration in the experience that when a vocal cord was cut out in roaring horses no lasting benefit whatever to the breathing was effected.

MR. SPENCER questioned whether in thyrotomy sufficient growth was always removed. In the specimen only a fine scar was to be seen. Had this patient lived longer would he have had a cicatricial band?

SIR FELIX SEMON remarked that it was impossible to remove more than was done in a case of malignant disease where everything in the neighborhood of the growth was removed.

The PRESIDENT suggested the occasional devotion of a meeting to the exhibition of sequelæ of cases previously shown to the society; such cases were apt to be lost sight of and much valuable information was thus wasted.

Case of Progressive Sinking of the Bridge of the Nose, Following Bilateral Hematoma of the Septum.

Shown by MR. W. G. SPENCER. About two years ago the boy had a fall on his face. There was no displacement nor fracture of the nose, but on each side a well-marked hematoma just within the anterior nares. These were absorbed without suppuration and the nose appeared to be unaltered by the accident; but a month ago the boy was again seen, as a progressive sinking of the bridge of the nose had occurred. On examination the septum is seen to be twisted, the muco-periosteum thickened, and the nasal passages much narrowed. There is no evidence of inherited syphilis.

The case is exhibited because the injury seems to have set up a chondritis and softening such as may happen in joints after slight injuries. There is always much doubt as to whether spurs and deviations of the septum are congenital or traumatic in origin. The case shows that these deformities may arise gradually some time after a slight injury and yet be really due to it.

The PRESIDENT related a case of a lady of about sixty, who had complained of a swollen septum which interfered with nasal respiration, and of pain in the arch of the nose, which was somewhat reddened. At the time he had not taken a grave view of the case. Ten days after seeing the patient there was a rapid increase of the swelling. An abscess formed; the cartilage came away, and in a fortnight the bridge of the nose was sunken. At his examination of the case he had used cocaine, to the application of which the patient had attributed the subsequent trouble. This was an extremely rapid case, in which there was no history of syphilis, and absolutely no cause to explain the mischief. It formed a considerable contrast to the gradual progression which had taken place in the case under discussion.

DR. STCLAIR THOMSON asked the president whether in his case the nasal bones fell in or the end of the nose.

The PRESIDENT said the nasal bones had fallen in.

DR. STCLAIR THOMSON had watched carefully one or two cases of hematoma of the septum. One was of interest by reason of the suppurative which had occurred; it seemed to be a hematoma, but was in reality an acute abscess. He attributed it to infection from a suppurating maxillary antrum. A portion of the cartilage came away. All the cases recovered without any injury to the appearance of the nose. He would suggest in this case that the collapse of the bridge was due to inherited syphilis. Certainly there was no distinct history, but the mother had had miscarriages and dead children, and she states that there is sometimes a nasty smell from the boy's nose. There was still a good deal of purulent matter about the middle turbinals.

MR. PAGET said it was surely inconceivable that loss of the cartilaginous septum could have any effect on the shape of the arch of the nose.

DR. DUNDAS GRANT asked what degree of disfigurement there was at the time of the injury? Might not the distortion be part of the original injury?

DR. WATSON WILLIAMS had seen a patient in whom he could find no portion whatever of the cartilaginous septum. There was no external deformity of the nose. The patient was open and frank and denied any history of syphilis.

DR. BABER said it was commonly held that no amount of destruction of cartilage was sufficient to account for collapse of the nose; the tip of the nose might be affected but not the bones. He was of opinion that it would be most interesting for members to see a photograph of the patient taken before the accident.

DR. LACK said that nearly every hematoma and abscess of the septum was due to an injury. In his experience such injury was always attended by some subsequent deformity and depression of the tip of the nose, though he granted it might not be evident for a few weeks, until the swelling produced by the injury allowed the result to be seen.

MR. VINRACE asked whether the pharyngeal condition existed at the time of the accident. There was now present a condition of the naso-pharynx which he thought must be of constitutional origin and not the result of injury.

DR. WYATT WINGRAVE considered that deformity was not surprising since the structures were only partially developed. In adults deformity was rare, unless the traumatism or subsequent inflammatory changes involved more than the septum, such as the nasal bones and nasal process of the maxilla.

MR. SPENCER, in reply, said the boy's nose was mainly altered in the cartilaginous portion; there was no alteration in the roof or bony part. He had watched the hematoma disappear, until the nose was quite free. Then arose marked progressive nasal obstruction, and later appeared a discharge of muco-pus and crusts, which he had left alone to show the members. There was no ulceration or abscess. Inquiries had been made as to congenital syphilis with negative results; but it was impossible to exclude it with certainty. One heard of general practitioners being blamed for not having the nose put straight in such cases. Here was a case where, although there was no obvious damage at the time or a month after, after two years had elapsed there was distinct deformity of the nose. In adults there might be destruction of the lower end of the septum without any alteration in the shape of the nose.

Case of Laryngeal Growth in a Man *æt.* 49.

Shown by DR. BARCLAY BARON. Patient, a man *æt.* forty-nine years, who has drunk hard, but denies syphilis, noticed a little dryness of the throat about a year ago, and some obstruction in May last, when he had a good deal of nose bleeding. Since then the difficulty in swallowing has increased, but he can still swallow well-masticated meat; the breathing is obstructed, the voice is altered and there is pain shooting up into the right ear; the larynx is practically filled up with a large growth, with irregular surface covered with creamy secretion; the epiglottis is pushed towards the left side. The growth increases in size, but it is believed to be an innocent tumor.

The PRESIDENT said he had never seen such a large growth in the larynx.

DR. WILLIAM HILL said that tracheotomy would probably be done unless members thought it unnecessary. Dr. Baron did not think it was malignant and asked for a diagnosis. It had not yet given serious trouble to the patient.

DR. DUNDAS GRANT asked if there was any certainty as to which part of the larynx it grew from.

SIR FELIX SEMON said there was a distinct margin between the epiglottis and the growth.

DR. WATSON WILLIAMS said it was attached low down and laterally to the ventricular band.

Case of Laryngeal Tumor.

Shown by DR. HERBERT TILLEY. A female æt. thirty-nine, whose chief symptom was hoarseness. She also had a troublesome cough. Laryngoscopic examination showed a sessile tumor, occupying the anterior two-thirds of the left ventricular band. It was congested, considerably raised above the surrounding surface, and had a granular mammilated surface. The vocal cords moved freely, although the left was sluggish compared with the right.

In answer to Dr. StClair Thomson, DR. TILLEY said that suspicions of pulmonary phthisis existed, but that he was anxious to gain the unbiased opinion of members who had only seen the growth, as many of its features did not suggest its tubercular nature.

Case of Probable Primary Specific Ulceration of the Tonsil.

Shown by DR. DUNDAS GRANT. A woman æt. thirty-two, was first seen on October 11, 1900, complaining of sore throat of three months' duration. It was followed at an interval of about one month by the appearance of a few brownish spots on the skin; more recently there has been a slight falling of the hair. On examination there was an enlargement of the right tonsil and an irregular ulcer occupying the region of its upper third. The glands at the angle of the jaw were slightly enlarged, and according to the patient's account had previously been larger still. The pain was most marked during swallowing. On the right anterior pillar there was an ill-pronounced opalescent patch, and the same, in a slighter degree, on the left one. There were no symptoms of genital inoculation, but the husband's tongue presented ample evidence of old-standing tertiary changes, with a slight erosion on each side. The primary inoculation dated more than twelve years back. During the first week the patient was treated by means of pills of mercury and opium, but the effect produced was comparatively slight. During the following week mercurial inunction was practiced, with the result that at the end of that time the discomfort in the throat had very markedly diminished, and the ulceration on the tonsil had become less pronounced. The patient has advanced six months in gestation. Dr. Eddowes, who saw the rash during the first week, gave the opinion that it was a syphilide, but at present it is too indistinct to afford ground for a very definite opinion. The diagnosis is somewhat open to question, but there seems little doubt that it is specific, and of a primary rather than tertiary nature.

The PRESIDENT thought they were all agreed as to the diagnosis.

DR. DUNDAS GRANT said that the change which had taken place had deprived the case of much interest. If members had seen the

case a fortnight ago, before the treatment which had confirmed the diagnosis so absolutely, he thought the opinion of the Society would have been the same as his own.

The PRESIDENT had seen a case of undoubted primary chancre of the tonsil in which the result of the treatment was very rapid. The patient was thought to have malignant disease of the tonsil, but the improvement was so great that after a week the tonsil regained its normal size. Four or five weeks later the diagnosis was confirmed by the appearance of a secondary eruption.

Case of Alveolar Epithelioma of the Ethmoidal Cells and Antrum.

Shown by DR. DUNDAS GRANT. The patient, a woman æt. fifty-three, was first seen in October', 1900, on account of blocking of the left nostril, discharge, and loss of smell, with pain in the left nostril and cheek, swelling of the left cheek and in the orbit, pushing left eye upwards and outwards. Her illness was of about nine months' duration, commencing with symptoms of cold in the head, and the formation of a polypus. At the end of July a polypus was removed, but on the next day the blockage was as complete as ever. Dr. Grant made a diagnosis of malignant disease, probably sarcomatous; but a specimen removed for microscopical examination was found by Dr. Wingrave to be of the nature of alveolar epithelioma. It was decided that a radical operation should be performed without delay. The superior maxilla was exposed. The disease was found to have eaten away the anterior wall of the antrum and a large portion of the floor and inner wall of the orbit. The incision was continued upwards on the inner side of the orbit, and the whole of the diseased tissue was scraped away from the ethmoidal cells, the lachrymal bone and os planum of the ethmoid being almost completely removed. The floor of the antrum was found to be free from disease, and the alveolar and palatal processes were therefore left in position, the rest of the superior maxilla being extracted. The raw surfaces were swabbed with chloride of zinc, grains thirty to the ounce; iodoform was insufflated, and the cavity was packed with iodoform gauze from the mouth, the external wound being carefully sutured. The packing was removed two days later, and the cavity was washed out with a weak Sanitas lotion. After other three days the stitches were removed, the whole wound having united with the exception of a small opening at the inner angle of the eye. The patient was discharged on the fourteenth day after the operation, and returned home complaining of no other discomfort than conjunctivitis of the left eye.

MR. SPENCER said that the saving of the alveolar process was an advantage. The growth was a burrowing carcinoma of the most malignant type, and one which offered a very poor prognosis. If Dr. Dundas Grant had succeeded in removing the whole of it he was very fortunate.

MR. H. BETHAM ROBINSON referred to a case recently under his care where the growth in the antrum extended into the ethmoid, and before operating it was impossible to define its exact limits. He had removed the ethmoid freely up to the cribriform plate, but even then the disease was not eradicated, for the growth appeared again some weeks later.

DR. DUNDAS GRANT, in reply to Mr. Spencer, said that he thought he removed all the growth, but it extended so close to the cribriform plate that discretion had to be used in scraping it away. Up to the present there is no sign of recurrence.

Case of Sarcoma of Thyroid Gland, Extirpation, Fatal Result.

Shown by DR. DUNDAS GRANT. The patient, a nurse æt. sixty-four, was the subject of an intensely hard swelling of the thyroid gland of about six months' duration. There was a slight myxedematous swelling of the face, and considerable dyspnea with tracheal stridor, worse on exertion. The larynx was displaced to the left side and edematous to such an extent that the vocal cords could not be seen. Swallowing was partially obstructed, and fluids tended to regurgitate into the larynx, giving rise to troublesome cough. There was no enlargement of the glands, and the thyroid rose during swallowing, though to a less extent than normal. The dangers of the operation being placed before the patient, she decided to submit to it rather than continue as she was. During the detachment of the left lobe of the thyroid, extreme laryngeal stridor supervened, and it was necessary to perform tracheotomy. The thyroid body was removed in its entirety, and on microscopical examination was found to be infiltrated with sarcoma. The patient rallied from the operation, but speedily began to acquire a very troublesome cough; fluids appeared to enter the air passages through the larynx and through the tracheotomy wound in the trachea; the right lung became completely dull, and death took place on the fourth day. Regurgitation of fluids into the larynx is probably a very unfavorable symptom when operations on the air passages are carried out, involving great risk of septic pneumonia. In this case it might have been better if a tampon cannula had been introduced instead of a simple tracheotomy tube, and if the extirpation wound had been left open and plugged with antiseptic gauze instead of being closed up. Tracheotomy could not have been performed before the thyroid gland was removed.

Case of Malignant Disease of the Larynx.

Shown by DR. DUNDAS GRANT. The patient, a man æt. fifty-seven, came under observation on August 2, 1900, complaining of hoarseness and pain in his neck, of gradual onset, and of three months' duration. The larynx externally was normal to the feel, but now Dr. Grant thinks it is slightly spread out. On laryngoscopic examination the epiglottis was seen to be folded in to a considerable extent on the left side. The arytenoids were much swollen, especially the left one, which shaded off into a large thickened aryepiglottic fold; the left cord was invisible, but there was seen with great difficulty in the midst of the thickened tissue, a fringe of a somewhat granular appearance, corresponding to the anterior half of the left vocal cord, or it might be growing out of the ventricle of the larynx. The right ventricular band was swollen somewhat, overhanging the cord. There was no history of specific infection and no history of phthisis in his family, although it was somewhat doubtful whether or not his father died of that disease. In his case, however, there was no evidence in the thorax, nor did the sputum contain tubercle bacilli. The nature of the case was not at all obvious, although the probabilities were in favor of its being carcinoma. The patient was put upon iodide of potassium (ten grs.) with perchloride of mercury (one drachm of the solution) three times a day. His weight decreased slightly, but when seen again in September there was practically no change in the condition; subsequently dyspnea became marked, and it was necessary to perform tracheotomy. Dr. Grant had postponed this in view of the doubt which he felt that the disease might be tuberculous, in accordance with the impression it made upon an experienced colleague. The patient has improved very much in general condition since the tracheotomy, which is sufficiently exceptional in tuberculosis to make it justifiable to exclude that disease. There is little doubt that the disease is malignant, epithelioma or sarcoma, the extent of infiltration as compared with the amount of ulceration affording some probability in favor of the latter. The exhibitor abstained from the removal of a portion for microscopical examination, as the patient had not consented to a radical operation.

MR. SPENCER remarked that the man complained of pain in the ear, indicating infiltration of the posterior third of the tongue. He considered the case too advanced for successful removal.

DR. LAMBERT LACK was doubtful about the diagnosis, but even if it were an epithelioma he thought it better left alone.

DR. GRANT was anxious to elicit an opinion as to whether this case was best left with the tracheotomy tube as at present, or whether the risk of removing the larynx was justifiable.

The following microscopic specimens illustrating Dr. Grant's cases were shown by DR. WINGRAVE:

1. Squamous epithelioma of larynx.
2. Alveolar epithelioma of maxillary antrum and nose. It apparently commenced in the glands of the inner wall of the antrum near the ostium.
3. Sarcoma of thyroid gland. Round-celled (small) variety, evidently commencing in the stroma. It had involved the whole of the gland, since none of the normal structure could be found. It was interesting, as it followed closely upon a sarcoma of the larynx, also under Dr. Grant's care, in which the thyroid gland was probably invaded secondarily, as much of its normal structure remained.

Case of Laryngeal Papillomata.

Shown by DR. WYATT WINGRAVE. A girl æt. eight, was first seen in June, 1898, complaining of thick voice with occasional aphonia, gradual in onset, and of two years' duration.

Several small papillomata were seen at the anterior commissure, and one on the left cord in its anterior third. There were no adenoids, but the faucial tonsils were slightly enlarged. Since that date as many as twelve fragments have been removed, after each time the larynx appearing clear of growth.

The warts were treated also with formalin (one per cent) and salicylic acid, the latter affording the better result but not removing the growth. In removal the ring curette proved more efficient than forceps or snare. Histologically each fragment was a digitated squamous papilloma. With regard to their pathology, Dr. Wingrave was inclined to consider them relics of an exaggerated vocal commissure, notwithstanding that the symptoms did not become marked until six years of age. Although there were no adenoids she was a confirmed mouth breather, a habit of which her mother has nearly broken her.

The slightly enlarged tonsils were removed in January last, but this did not seem to materially influence the course.

When last seen her voice was fairly clear and strong, and the larynx had been free from growth since October 2d, when the last fragment was removed. At present there is a slight thickening in the anterior commissure.

DR. HERBERT TILLEY inquired what anesthetic was used in the case, and, if a general one, what position was the patient placed in

during the operation. He had recently removed a large papilloma from a child's throat (four years old) which on two occasions had almost caused asphyxia, and had been struck by the ease with which the operation could be performed when the patient was chloroformed deeply and maintained in the sitting position. Under such circumstances it was necessary to push the chloroform until the laryngeal reflex had just disappeared; and during the thirty seconds or so following to remove as much growth as possible before the reflex returned again.

MR. VINRACE inquired why Mr. Wingrave ascribed the condition to a congenital cause, no symptoms having presented themselves until the child was five years old. It was difficult to understand how the original structure in its entirety failed to cause symptoms and alteration in the voice.

MR. WINGRAVE, in reply, said that he had found cocaine was simpler, since the patient well tolerated inspection and manipulation. He did not consider the absence of voice symptoms for the first three years as evidence against congenital origin, since he remembered an instance in which symptoms of a congenital web of the anterior commissure were not recognized till the age of twenty-seven. He felt that the situation of the growth was much in favor of its congenital origin.

Laryngeal Case for Diagnosis (? Tubercular).

Shown by DR. STCLAIR THOMSON. The patient is a draper æt. forty-eight, who states that he has been hoarse for twelve months. There is slight though not marked dysphagia, but his weight has fallen from ten stone ten pounds to nine stone four pounds. The right vocal cord is nearly entirely concealed by a smooth, round, red, soft-looking swelling of the right ventricular band, aryepiglottic fold, and arytenoid. This swelling on phonation impinges on the left ventricular band, on which it appears to have caused some abrasion. Glands are not enlarged. There is a specific history. The pulse is hurried (110), the temperature is 100.2°, but the chest sounds are normal. The sputum has not yet been examined. Under small doses of iodide of potassium the obstruction has in a week sufficiently diminished to show a small portion of both cords, which are now seen to be pale and slightly ulcerated. Dr. Thomson was therefore now inclined to the diagnosis of tuberculosis.

The PRESIDENT considered the appearance was that of malignant disease.

DR. DUNDAS GRANT wished to support Dr. Thomson's own diagnosis of tuberculosis.

DR. STCLAIR THOMSON said he had only seen the patient twice. There was so much obstruction and catarrh that he did not at first like to give him iodide, but on five-grain doses there had been some

improvement in the last week. He wished for suggestions as to treatment. Probably everyone was agreed as to the necessity for tracheotomy. He would report again on this case at a later meeting.*

Case of Fracture of the Larynx.

Shown by MR. WAGGETT. A female æt. fifty-two, in whom fracture of the thyroid cartilage had occurred as the result of severe pinching of the larynx between the fingers and thumb of a persecutor. Severe dyspnea lasted for some days, external swelling was present, and much pain experienced.

At the present date, some two months after the injury, nothing abnormal could be seen by the mirror. External palpation of the somewhat enlarged larynx caused pain, and indicated the presence of an ununited fracture of the thyroid cartilage, separating the upper half of one ala from its fellow close to the anterior angle. The fracture was vertical above, curving to the right at its lower end. The semi-detached antero-superior portion of the right ala could be made to ride over the left ala. The voice was stated to have altered in character since the receipt of the injury, but the action of the vocal muscles showed no gross sign of impairment. He did not propose any surgical interference.

DR. HERBERT TILLEY very much doubted if the feeling of crepitus in this case was not entirely due to the movement of the larynx on the vertebral column. He had, while the patient leant well forward, lifted the larynx away from the column, and could not obtain the crepitus, however carefully he manipulated the larynx, but immediately the latter touched the spinal column the crepitus at once became evident. It was difficult also to conceive that the inflammation, which was evidently produced by the traumatism, should have so completely resolved as to leave the cartilaginous fragments loose. One would have expected the traumatic perichondritis to have firmly welded them together.

DR. FITZGERALD POWELL thought if fracture of the cartilage existed it would result in severe and continuous dyspnea.

MR. PARKER said that he quite agreed with Dr. Tilley with regard to the possibility of obtaining crepitus on lateral movement of the larynx in most people, but in this case the crepitus was even more marked on the patient's swallowing, which was unusual. He therefore thought there was a fracture of the thyroid cartilage.

DR. DUNDAS GRANT thought he felt a crepitus, as if there was fracture of the lower cornu of the thyroid cartilage, just above where it articulated with the cricoid.

MR. WAGGETT, in reply to Dr. Tilley, said that he believed the crackling or crepitus of which the latter spoke had nothing to do

* Since the date of meeting the report on the sputum shows the presence of tubercle bacilli.

with the fracture, but was such as could be detected when the larynx of any thin person was pushed from side to side over the underlying structures. In the present instance a fine crackle was produced when by lateral pinching the thyroid cartilage was distorted, an act which caused a portion of the right ala to ride over the left, leaving a sharply-defined groove between the two.

In answer to Dr. Powell he drew attention to the history of seven dyspnea confining the patient to bed for three weeks.

Case of Hemorrhage of the Vocal Cords.

MR. CHARLES PARKER showed a case of hemorrhage on the vocal cords in a woman æt. thirty-five, a school teacher. The hemorrhages were situated about the middle of the upper surfaces of either cord. The patient complained of hoarseness and aching of the throat after using her voice. There were no signs of any tendency to hemorrhages elsewhere.

In answer to Dr. Lack, MR. PARKER stated that he felt confident that when he first examined the case there was a hemorrhage only on the left cord. She was examined by several people, and being rather intolerant strained and choked a good deal, and on finally examining the case Mr. Parker found that a hemorrhage had occurred on the right cord. This was more than a month ago, and yet both hemorrhages remained unaltered.

The PRESIDENT had never before seen such an interesting example of this condition.

DR. GRANT had brought before the Society the case of a young lady with sudden loss of voice—as if an hysterical attack of aphonia—which was accompanied by an effusion under the mucous membrane of the cord.

INTERNATIONAL MEDICAL CONGRESS.

SECTION OF LARYNGOLOGY AND RHINOLOGY.

Summary of Proceedings—Session of August 5, 1900.

(Proceedings continued from page 448.)

Spasmodic Rhinitis—ALEXANDER JACOBSON (St. Petersburg).

1. Spasmodic rhinitis, having an etiology and a course that varies, is observed in many varieties and forms.

2. The forms have not been sufficiently studied or differentiated, so that they are easily confounded.

3. It is, therefore, necessary to define with precision hay fever as a variety (the best studied of all), which has a characteristic periodic course and an etiology established by experiments (Blackley).

4. Hay fever is a variety of spasmodic rhinitis (Lermoyez), but this term should not be used to apply to spasmodic rhinitis due to other causes.

5. It must be admitted that these cases of spasmodic rhinitis can be explained by a vaso-motor paralysis—coryza vasomotoria (Moritz Schmidt).

6. There is a form of spasmodic rhinitis which merits the name toxirhinitis (Jacobson).

7. Cases of toxirhinitis are influenced by intoxications and auto-intoxications; they have an acute course, and are complicated by gastro-intestinal troubles and cutaneous manifestations (urticaria). The disease attacks persons who are in perfect health, and who have no general predisposition.

8. Considering spasmodic rhinitis as solely of vasomotor origin, nasal hydrorrhea may be included, although it does not present any phenomena of a spasmodic character.

9. Nasal hydrorrhea being due to internal causes may present no local symptoms except that of abundant secretion. In such cases the mucous membrane is neither swollen nor injected.

The Preponderating Role of Auto-Intoxication in Periodic and Aperiodic Coryza—Therapeutic Deductions—Eleven Cases.

MOUNIER (Paris).

The starting point of this paper is a case of spasmodic rhino-bronchitis with paroxysms in many, which the author was enabled to follow in all its details for years, and cure in a few weeks by an appropriate simple diet.

The *ten* other cases with complete cure or considerable improvement, are a confirmation of the importance of auto-intoxication (gastro-intestinal) in the two forms of spasmodic coryza.

The elimination of toxins by the Schneiderian membrane and the glands of the respiratory system explains:

1. The attacks of *aperiodic* coryza.

2. The exceeding susceptibility of the nasal and bronchial mucosa to external excitations in coryza clearly *periodic*.

A diet must, therefore, be the basis of all treatment of a serious nature, and for adjuvants, certain remedies, strychnine and benzonaphthol.

Surgical intervention on the turbinates and deflections of the septum or on the hypertrophied tissues of the naso-pharynx, must not be neglected on that account, especially in hay fever.

New Method of Treating Nasal and Naso-Pharyngeal Affections by Applications of Hot Air. M. LERMOVEZ and G. MAHU (Paris).

Hot air has not up to the present been utilized in the treatment of the diseases of the upper air passages except in the form of inhalations, a coarse method which causes moist air whose temperature hardly is above that of the surrounding air to *circulate* in the nasal fossæ. We propose to apply to circumscribed areas of the mucous membrane, *currents of dry air superheated* to a temperature of 80 to 100°, a method which recalls those employed by Holländer and Jayle in dermatology and in gynecology. The supply of air under pressure is furnished us by steel tubes containing the air under a pressure of 120 atmospheres; the latter is heated in a metallic worm, and it is conducted to its destination by a supple metallic tube, with a double coating of asbestos. At the end of this tube are screwed canulæ of various sizes and shapes, according as it is desired to apply hot air to the turbinates, at the Eustachian openings, or in the ear. At the base of the canula there is attached a regulator of the temperature and pressure.

Applications of hot air are made under the control of the vision, with a head mirror and speculum; sitting lasts two minutes and is repeated two or three times a week. As a rule, from eight to twelve sittings are necessary to obtain a good result. This treatment is perfectly painless. The entrance of the hot air brings about an intense retraction of the mucous membrane, which is soon followed by an abundant watery defensive secretion which ceases in a few moments. The value and effect produced by the treatment shows itself next; at first temporary, it tends to become permanent. Applications of hot air have especially succeeded with us in cases of *chronic congested coryza* with intermittent nasal obstruction; it gives remarkable results as well as lasting, provided there is not yet angiomatous degeneration of the nasal mucous membrane. They rapidly suppress the sneezing and other nervous symptoms of *spasmodic coryzas*. They dry the flow of *nasal hydrorrhea* and bring back the nasal mucosa to its normal objective state. In hay fever, in which our experience is still more recent, they seem only to relieve the attacks. Finally, they give good results in *aural troubles*,

deafness and tinnitus, associated with catarrh of the nose and of the naso-pharynx; *otalgia* gives way to them almost immediately. An attempt to make this treatment the panacea of diseases of the nose would be to condemn it to a rapid loss of all consideration. We believe it useful to state that it has, up to the present, given no result in ozena, purulent catarrh, nasal lupus, true hypertrophic rhinitis, no more than in all those nasal and naso-pharyngeal diseases which justify surgical treatment.

On the Use of Chromic Acid in Solution of Fifty Per Cent in the Treatment of Malignant Tumors of the Mucous Membrane of the Pharynx, Nose and Larynx—H. DU FOUGERAY (Paris).

The author mentions the following three cases:

1. A woman of thirty-eight was operated for cancer of the left breast three years ago. Eighteen months after this operation she saw pharyngeal troubles appear. Examined at the very beginning there was found an exfoliation of the velum palati on the left side with a beginning ulceration. A histologic examination of a fragment showed it to be an epithelioma. Curetting of the implicated portion, then applications of a fifty per cent solution of chromic acid were made. These applications were renewed every other day at the beginning, then at longer intervals. At the end of three months the patient could be considered cured and there had been no relapse since more than one year.

2. A woman, fifty years old, was operated for a cancer of the uterus four months ago. Appearance of a neoplasm on the velum palati with beginning of ulceration on the right side. Microscopic examination shows an epithelioma. Same treatment as in the preceding case. The evolution of the neoplasm ceased and it tended to cure. The cure was almost complete when the patient died two months later from a lung trouble.

3. A man of fifty, attacked by cancer of the larynx since nearly two years, refuses all surgical measures. As difficulty of breathing increased tracheotomy proposed and was refused. Then applications of fifty per cent solution of chromic acid to the larynx were made every other day. The smothering diminished and breathing became almost easy at the end of a fortnight. This condition continued up to the death of the patient, developed three months later through cancerous cachexia.

The author does not wish to prognosticate in regard to the future of this question. He merely records these cases to lead to researches along this line, for new cases are necessary.

Contribution to the Study of Nasal Tuberculosis—TEXIER (Nantes)
and BAR (Nice).

Whilst numerous contributions have attracted attention to a knowledge of nasal tuberculosis it may always be said to be a very infrequent trouble and still more rare when primary. It is, in general, a condition secondary to a state of generalized tuberculosis and localized at its maximum in the respiratory passages. We bring here three cases from our personal observations. One among them has a correspondingly greater value in view of the fact that microscopic examination confirms the nature of the lesions as stated. The others have some value for general discussion. All three are unpublished and are added to the very small number (about 70) of published cases.

The symptomatology of this disease is sufficiently exact and permits it to be divided into a *pseudo-polypus form*, as Cartas has done, and an *ulcerative form*, and even as Chiari does, a *granular form*. This disease must not be mistaken for lupus or tertiary syphilis of the nose. Prognosis is governed by the general state and the form of the local affection.

The really efficacious local treatment is curetting, with the application of 80 per cent lactic acid. The general treatment should be carefully looked after above all things.

INTERNATIONAL MEDICAL CONGRESS.

SECTION OF OTOTOLOGY.

Summary of Proceedings—Session of August 7, 1900.

(Proceedings continued from page 450.)

Diffuse Cranial Ostitis with Thrombo-Phlebitis of the Veins of the Diple of Otic Origin—LAURENS (Paris).

The author reports the case of an old woman affected with mastoiditis of ordinary appearance.

He had trephined the apophysis, when the pus led him to a group of mastoid cells extending into the occipital bone. In these cells, filled with pus, there opened canals which had to be carved out with the gouge-pincers, and which represented the veins of the diple; the walls of the bony tissues, formed by the two tables, internal and external, were attacked by ostitis; the extent of these lesions was such that it was necessary to curette from the frontal to the occipital bone.

The author observes in connection with the case: First, the absence of special symptoms of this diffuse otitis; second, the vast extent of the lesions; third, the absence of septicopyemic symptoms in this thrombophlebitis, whose limits were the lateral sinus and the superior longitudinal sinus.

On the Diagnosis of Brain Complications in Otic Infections—P.

COLLINET (Paris).

The author relates two cases, from which he concludes that, in cases of meningitis of otic origin, intervention should be made to endeavor to suppress the source of infection. The boundaries of the dura mater should never be passed except in the face of a formal indication furnished by visible anatomical lesions, by a persistence or an aggravation of symptoms during a sufficiently long period of time after the preceding intervention, or by phenomena of cerebral or cerebellar localization.

In cases of brain abscess even, suspected from signs apparently of little importance, such as a tendency to nausea, more or less pronounced headache, a marked pain under pressure or percussion limited to one point, despite the existence of a general good state, urgent intervention is necessary, for a delay of a few hours may lead to the most grave consequences for the patient.

On Some Forms of Infection with the Ear as Starting Point—

STANCULEANU and BAUP.

Some infection having an auricular starting point occur through the intermediary of the thrombosed lateral sinus; others without thrombophlebitis. To the first category belong, among the cases they report, a septicemia with hypothermia due to the bacillus-coli and a cerebro-spinal meningitis.

They include in the second group two fatal streptococcal septicemias and, on the other hand, more attenuated infections, such as a case of infectious pseudo-rheumatism and a case of mental confusion consequent, the one and the other, on cases of benign otitis media.

On the Good Effects of Tympanic Massage Manometrically Determined by the Patient in the Treatment of Deafness and Tinnitus Following Sclerosis of the Middle Ear—SUAREZ

DE MENDOZA.

The author thinks that sclerosed unfortunates have more to gain from the long-continued use of manometric massage than from capital surgical operations.

After having, during eight years, employed massage under the direct control of the physician, submitted these patients to short sittings of massage, he orders them during the last five years, long sittings, fifteen to twenty minutes, under their own guidance. He has been able to determine a relief of much greater extent in 150 of these patients.

In connection with this subject he exhibits the manometer which he has had constructed and uses in these cases.

Presentation of Instruments—SUAREZ DE MENDOZA.

The author presents a series of instruments he has devised.

In order they are:

(a) A series of bougies of regular calibres and graduated by tenths of millimeters, for the treatment of obstruction of the Eustachian tube.

(b) A special device for the rapid and perfect sterilization of bougies.

(c) A covered grooved sound, the object of which is to avoid for the patient the inconvenience which results from the presence of a sound in the nose, when the bougie must remain several hours in the Eustachian tube.

(d) A trephine protector, a combination of the protector of Stacke and of the tubular saw already described by the author.

Benign Suppurations of the External Attic—BOTÉY (Barcelona).

The author only desires to consider the suppurative inflammations strictly limited to the small space occurring between the malleus and incus on one side and the external wall of the tympanum on the other, for he feels convinced that this external attic may constitute a pathological entity.

Six cases which he reports testify to this. The characteristics of this affection are the following: The purulent secretion is scanty, does not have a foul odor; audition is affected very little, the tympanum is intact and perforation of Shrapnell's membrane almost always located behind the constriction of the malleus, with fungosities and caries of the lower edge of the wall of the logette. Caries of the two ossicles is relatively rare, despite the denudation of a part of the body of the malleus and of the incus.

This atticitis, of relative benign nature, is almost always a result of diffuse otitis media which attack all the cavities of the middle ear and become finally localized in the external attic.

Being given the anatomy of this region, and also the multiple adhesions and connective tissue thickenings which may form in the upper part of the external attic, it may be easily seen that these suppurative processes may confine themselves in these spaces which are unconnected with the external attic.

The point of departure is always the antrum; the head of the malleus, the body and the short apophysis of the incus projecting into the external attic and forming in connection with the wall of the logette a gutter into which falls the pus poured out by the lower angle of the auditus.

Injections with Hartmann's cannula, curetting of the carious bony portions, swabbing the fungosities with chloride of zinc or chromic acid, are sufficient to cure the trouble, without removal of the ossicles or Stacke's operation, if the external attic is alone implicated.

BIBLIOGRAPHY.

It is our purpose to furnish in this Department a complete and reliable record of the world's current literature of Rhinology, Laryngology and Otology.

All papers marked (*) will be published in abstract in THE LARYNGOSCOPE.

Authors noting an omission of their papers will confer a favor by informing the Editor.

I. NOSE AND NASO-PHARYNX.

***A New Method of Treatment of Nasal Affections by the Use of Hot Air.**

LERMOYEZ AND MAHU (Paris). *Ann. des Mal. de l'Or.*, July, 1900.

***Hypertrophy of the Mucosa of the Inferior Turbinal Simulating a Malignant Tumor of the Nose.**

G. DESVAUX (Angiers). *Ann. des Mal. de l'Or.*, September, 1900.

Epistaxis. R. M. NILES. *Alkaloidal Clinic*, October.

***The Importance of Preliminary Treatment for Intra-Nasal Operations.**

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***The Supra-Tonsillar Fossa; the Cause of Peritonsillar Abscess; Treatment.** R. BOTEY (Barcelona). *Ann. des Mal. de l'Or.*, November, 1900.

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***Curtain Ring for Eight Years in Pharynx of a Child.** H. L. LACK (London). *Lancet*, April 28, 1900.

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***Empyema of the Antrum of Highmore.** ADOLPH O. PFINGST (Louisville). *Louisville Monthly Journal of Med. and Surg.*, November, 1900.

***Chronic Empyema of the Frontal Sinuses, with Notes on the Treatment of Fourteen Cases.** HERBERT TILLEY (London). *Lancet*, July 14, 1900.

Two Cases of Empyema of the Left Sphenoidal Sinus. SOUZA (Valladares). *Ann. des Mal. de l'Or.*, September, 1900.

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***Etiology, Causes and Anatomy of Singers' Nodes.** CHIARI (Vienna). *Ann. des Mal. de l'Or.*, October, 1900.

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- ***Rupture of the Apparently Healthy Esophagus.** E. J. McWEENEY. *Lancet*, July 21, 1900.
- ***Endoscopy of the Esophagus and Stomach.** GEORGE KELLING. *Lancet*, April 28, 1900.
- ***Treatment of Severe Cases of Diphtheria with Saline Infusions.** E. E. LASLETT. *Lancet*, October 20, 1900.
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- ***Acoumetric Notations.** A. HARTMAN (Berlin). *Ann. des Mal. de l'Or.* November, 1900.
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- *Some Anatomical Details Concerning the Etiology of Bezold's Mastoiditis.** A. A. GUYE (Amsterdam). *Ann. des Mal. de l'Or.*, Oct., 1900.
- Case Illustrative of the Absence of Ordinary Tympanic Signs in Acute Suppurative Mastoiditis following Abscess of the Middle Ear.** C. J. LANGFRIED (New Orleans, La.) *New Orleans Medical and Surgical Journal*, October, 1900.
- Remarks Upon the Pathology and Symptomatology of Intra-Cranial Conditions Complicating Suppuration of the Middle Ear.** JOHN P. DAVIDSON (Richmond, Va.) *Virginia Med. Semi-Month.*, Oct. 26, 1900.
- *Mastoid Disease, Acute Otitis Media and Pyemia Occurring in an Epileptic as a Result of Injury.** R. A. WILSON. *Lancet*, May 12, 1900.
- *Report of Four Cases of Mastoid Abscess.** M. F. COOMES (Louisville). *American Practitioner and News*, November 1, 1900.
- Suppurative Middle Ear and Mastoid Disease and Some of Their Complications.** REDMOND W. PAYNE. *Pacific Med. Journ.*, Sept., 1900.
- *Two Cases of Sinus Pyemia with Unusual Results.** JAMES KERR. *Lancet*, October 13, 1900.

VIII. THERAPY.

- *Extract of Suprarenal Capsule in the Treatment of Diseases of the Nose, Throat and Ear.** E. B. GLEASON. *Internat. Med. Magazine*, November, 1900.
- *MercuroI as an Antiseptic in Diseases of the Nose and Ear.** R. LAKE. *Lancet*, December 15, 1900.

X. MISCELLANEOUS.

- *Contribution to the Study of Scleroma and Its Treatment.** H. MONNIER (Vienna). *Ann. des Mal. de l'Or.*, July, 1900.
- *The Physiology of Voice Production.** M. A. GOLDSTEIN (St. Louis). *Med. Fortnightly*, September 10, 1900.
- Coexistent Pertussis and Measles.** D. G. SEMCHENKO. *Ejened Journ. Prakt. Med.* (St. Petersburg), vii., 577, 1900.
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- Diseases of the Ear, Nose and Palate.** F. A. REJN. *Khirurgiya*. 1900, viii., July, 64-76.
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SELECTED ABSTRACTS.

Spontaneous Discharge of Cerebro-Spinal Fluid from the Nose

—W. FREUDENTHAL—*Gaillard's Medical Journal*, June, 1900.

The writer's case was a woman of fifty years who had a "spontaneous discharge of a watery fluid through the nose for more than two years. Before the flow commenced grave brain symptoms were present, which disappeared as soon as the escape of fluid began. Twice an intermission of the flow occurred, and each time it was accompanied by symptoms of brain pressure, which disappeared when the flow made its appearance." The flow is continuous, day and night, differing from nasal hydrorrhea which stops at night.—The chemical analysis of the fluid confirms the diagnosis of cerebro-spinal fluid. Both sugar and proteids were found, the former in 0.05 per cent, the latter 1 per cent. There was but a trace of phosphorus present and no mucin.

The author is of the opinion that a tumor, situated on the hypophysis cerebri, exists, and causes the pressure symptoms.

Nothing is done to check the discharge, for then the suffering becomes worse, as a result of the increased intracranial pressure.
STEIN.

The Bacteriology of the Normal Nose — STCLAIR THOMSON — *Journ. of Laryngol.*, August, 1900.

The average healthy nose is almost as clean and needs as little washing as the conjunctiva.

The author's former experiments in 1895, associated with Dr. Hewlett, showed that, under normal conditions, micro-organisms are never plentiful in the nasal fossæ; and that in more than eighty per cent of their observations the mucus was entirely sterile. The conclusions of these authors, that the nasal mucus is not bactericidal, but that it simply inhibits growth, or, at least, does not favor it, have been confirmed by a number of observers.

M. D. LEDERMAN.

The Presence of Virulent Tubercle Bacilli in the Healthy Nasal Cavity of Healthy Persons—N. W. JONES (Chicago, Ill.)— *New York Med. Record*, Aug. 25, 1900.

After considerable personal research the author arrives at the following conclusion: First, that virulent tubercle bacilli are to be found in the nasal cavities of healthy persons in the ordinary walks of life, as nearly as his series of experiments will show; secondly, these bacilli are not to be found so frequently in these persons as in those who have the care of the tuberculous.

M. D. LEDERMAN.

Report of a Case of Gangrene of the Tonsil—ALEXANDER C.

HOWE—*Gaillard's Medical Journal*, June, 1900.

The patient, twenty-six years of age, was suffering with a severe sore throat for a week when seen by the author. The face and neck were swollen, lips excoriated, fetid dark brown mucus oozed from the mouth, a frightful odor permeated the room, pain was severe, temperature 104.4°, pulse 120. Both tonsils were swollen and of a purplish color. The left was swollen beyond the median line and up into the naso-pharynx, its surface necrosed and gangrenous. The entire mass was removed with a forceps. It was black and firm and of the consistency of putty. A 25 per cent solution of H_2O_2 was applied. A further removal of tissue was necessary as the process seemed to be spreading. This procedure of removing tissue, followed by the application of nitric acid, was continued for some time, until after three weeks, when the patient was pronounced well. The patient died about three months afterwards from a general septic condition following tamponading for uncontrollable epistaxis.

STEIN.

Curtain Ring for Eight Years in Pharynx of a Child—H. L.

LACK (London)—*Lancet*, April 28, 1900. Harveian Society.

The author showed a curtain ring which he had removed from the pharynx of a child, aged nine years. The ring was swallowed when the child was nine months old, and produced violent fits of coughing and choking which soon passed off. For years the ring had caused no symptoms. The upper edge was free in the post-nasal space, the lower part lay free behind the arytenoids, while the two sides were firmly embedded beneath the mucous membrane of the lateral pharyngeal walls. The ring was cut through with bone forceps at its lowest part, opened out and pulled upwards until free. The author emphasized the importance of the coughing and choking attacks following a history of swallowing a foreign body, attention to which would lessen the number of these cases which had been overlooked.

STCLAIR THOMSON.

Extract of Suprarenal Capsule in the Treatment of Diseases of the Nose, Throat and Ears—E. B. GLEASON (Phila.)—

International Medical Magazine, November, 1900.

The author recommends a freshly prepared solution of ten per cent strength. Boiling the solution will sterilize, but not preserve it. Adding preservatives like boric acid and glycerine, he thinks, impairs its action and besides act as irritants.

In hay fever the patient is provided with gelatine capsules containing two to three grains of the adrenals. One is to be taken internally every two to three hours, and one can be dissolved in a teaspoonful hot water, filtered, and the solution applied to the nose on cotton.

STEIN.

Chronic Empyema of the Frontal Sinus, with Notes on the Treatment of Fourteen Cases—HERBERT TILLEY (London)—*Lancet*, July 14, 1900.

After some consideration of the anatomy of the frontal sinus the author passes on to the etiology, symptoms and diagnosis of frontal sinus suppuration. Under the heading of treatment he mentions that he has given the method of intranasal irrigation a fair trial in four cases; but without any permanent result except in one case. He then describes the external operation as now generally performed—opening of the cavity, removal of pathological contents, free communication established with the nose and packing with gauze. The external skin wound should not be at once completely closed up. To neglect of this he attributes some of the fatal cases which have occurred. The paper is accompanied by a table giving particulars of fourteen cases which were operated on by the external method.

STCLAIR THOMSON.

Rupture of the Apparently Healthy Esophagus — E. J. McWEENEY—*Lancet*, July 21, 1900.

Considerable doubt has been thrown on the possibility of a rupture taking place in a healthy esophagus. A sufficient number of cases have now been recorded to establish the occurrence as an undoubted, if rare, morbid entity. The author records a case which appears to have been simply due to vomiting. It is particularly interesting, not only from the full post-mortem report given, but because of the histological report of the margins of the torn esophagus. Particulars are then given of sixteen other cases, and the author comes to the following conclusions:

Age.—Mostly men in the prime of life, the average age being forty-two.

Alcoholism.—This seems to be a predisposing factor.

Vomiting.—In every case tabulated the accident appears to have occurred either during vomiting or retching.

Symptoms.—There was a feeling of something having given way, pain, collapse, dyspnea and subcutaneous emphysema.

Duration of Life.—In one case seven and a half days; on an average seventeen hours.

Position and Shape of Rupture.—Generally a prolonged slit, just above the diaphragm.

Etiology.—After a careful study of existing data the author arrives at the conclusion that the two main factors are (*a*) softening of the coats and (*b*) sudden increase of pressure from within. The softening is due partly to intravital digestion and partly to inflammatory infiltration. The intravital digestion is to be accounted for by (*a*) circulatory disturbance which in the author's case took the form of venous thrombosis, and (*b*) prolonged sojourn of peptic matters in the gullet from prolonged retching.

STCLAIR THOMSON.

An Anomalous Case of Central Hemorrhage Connected with Increased Pressure in the Ear due to Violent Coughing—

MACLEOD YEARSLEY, F. R. C. S.—*Journ. of Laryngol.*, Aug. 1900.

Briefly the history is as follows: A female, fifty-four years of age, while seated at luncheon was attacked with a fit of violent coughing. During the attack she experienced a sudden "crack" in both ears, which caused her considerable vertigo, deafness, tinnitus and loss of memory. The vertigo lasted for twelve hours and was very marked. The deafness was less marked. On the next day there was some weakness of the right upper and lower extremities and slight left facial paralysis.

The vertigo lasted for over a month—Rinné's test was positive on both sides. Bone conduction was impaired on both sides, about twenty-five per cent being lost.

Arterial degeneration was marked.

Treatment consisted of counter-irritation and diluted hydrobromic acid in drachm doses, three times daily. A good result followed in a month's time.

M. D. LEDERMAN.

Multiple Ossified Ecchondrosis and Exostosis of the Trachea and Larger Bronchi—I. B. DIAMOND—*Medicine*, Nov. 1900.

The author describes a case in a man of forty-eight years, wherein the entire trachea and larger bronchi were involved.

The cartilages of the larynx are calcified. The trachea is hard and rigid, due to the irregular shaped masses, which are situated beneath the mucous membrane extending from the second cartilaginous ring, filling out the membranous interspace, gradually spreading over the rings, down to and beyond the bifurcation. A similar appearance as described above is found in the bronchi.

Microscopical examination shows these masses to be of true bone formation, but the author's painstaking study leads him to believe that in all these cases where the growth is isolated from its neighboring cartilage or not, we have to deal with an outgrowth from the perichondrium.

Traumatism and various chronic inflammations in the mucous membrane are held to be the essential factors in its production.

A significant fact in these cases is, that nearly all of such patients die from some pulmonary affection, like tuberculosis, abscess or gangrene of the lungs, probably due to a lessened resistance of the respiratory tract, to microbic invasion, as a result of epithelial change.

STEIN.

BOOK REVIEWS.

Diseases of the Tongue. By HENRY T. BUTLIN, F.R.C.S., D.C.L., Surgeon to St. Bartholomew's Hospital; formerly Erasmus Wilson Professor of Pathology and Hunterian Professor of Surgery at the Royal College of Surgeons, etc., and WALTER G. SPENCER, M.S., M.B. (London), F.R.C.S., Surgeon to the Westminster Hospital, and in charge of the Department for Diseases of the Nose and Throat; formerly Erasmus Wilson Professor of Pathology at the Royal College of Surgeons. Illustrated with eight chromo-lithographs and thirty-six engravings, 475 pages. Price, \$3.25. Publishers, Messrs. Cassell & Co., London, Paris, New York and Marlborough. Also to be procured of L. S. Mathews & Co., 714 Pine St., St. Louis, Mo.

Mr. Henry T. Butlin has long been regarded as the first authority on diseases of the tongue, and the revised second edition of this valuable work forms a more complete treatise on the diseases of the tongue than the clinical manual which practically constituted the first edition published in 1885.

Each disease is treated in a very systematic manner and special chapters from the pen of Mr. Walter G. Spencer have been added, including the later pathology of the tongue. The long experience of the author on the question of cancer of the tongue and operative surgery for malignant diseases, is responsible for another valuable chapter. A complete classified bibliography constitutes the concluding chapters.

The publishers are to be highly complimented for the unusual excellence in the character of the typography and the general make-up of the volume. Special mention should be made of a series of eight full-page chromo-lithographic plates illustrative of the pathology of this organ.

La Surdi-Mutité. Étude Médicale. Par ETIENNE ST. HILAIRE. Vol. grand in 8° de 300 pages, suivi d'un index bibliographique de 55 pages. Paris: Maloine, éditeur.

Deaf-Mutism. A Medical Study by Etienne St. Hilaire. 8vo., pp. 300, followed by a bibliographical index of 55 pages. Paris: Maloine, publisher.

This book is an exposition of the question of deaf-mutism. It commences with a definition of the deaf-mute and with an *exposé* of the different classifications which have been proposed. The author next reviews the statistics made in different countries. Based upon the reports of the councils of revision, he establishes the fact that, contrary to what has been said, deaf-mutism has rather a tendency to diminish in France. There has been a period of increase due to accidental causes brought about by the Franco-Prussian war.

The author next studies the action of similar heredity, of unsimilar heredity, and of consanguinity, then he makes a search for the causes of degeneration in general which may give rise to deaf-mutism. Finally, a chapter is devoted to the occasional causes of acquired deaf-mutism (cerebral and meningeal affections, scarlatina, typhoid fever, variola, measles, falls on the head, etc.)

Pathological anatomy is treated of in a very complete manner. Symptomatology includes several parts. The symptoms connected with the functions of hearing and of speech are studied with much attention to details. The diagnosis, prognosis, prophylaxis and treatment of deaf-mutism are studied with much care. The question of acoustic exercises is the subject of a special chapter, and the author is a partisan of this method and shows how, in his opinion, these exercises should be conducted.

Descriptive Catalogue of the Museum of the Sixth International Otological Congress. Compiled and edited by W. JOBSON HORNE and ARTHUR H. CHEATLE, Hon. Secretary to the Museum Sub-Committee. J. & A. Churchill, 7 Great Marlborough St., London.

This is one of the most valuable reference volumes ever published, containing a description of the principal collections in otology and laryngology extant. It has been truly observed by all who are competent to express an opinion in the matter, that the Museum of the Sixth International Otological Congress was the greatest collection representing the anatomy and pathology of the ear and its adnexa ever exhibited at one time and in one place. Contributions from nearly all of the countries represented at this Congress were presented and the catalogue now published enumerates the source from which each specimen was obtained, a description of the specimen and any reference or clinical account which may add to its interest and value.

Included in this catalogue is the celebrated Toynbee collection of preparations of diseases of the ear. The catalogue of the Toynbee collection has been out of print for some time and its incorporation in the Museum catalogue will be received with much pleasure by those to whom this world-known collection is of value both for reference and study.

We regret to add, from the standpoint of the American reviewer that America was not represented in this valuable Museum. Possibly the difficulty and risk in transportation of delicate specimens and preparations is partially responsible for this omission.

The Physician's Visiting List, 1901. LINDSAY & BLAKISTON. Now ready and for sale by all booksellers and druggists. P. Blakiston's Son & Co., Philadelphia. Price from \$1 to \$2.25.

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THE LARYNGOSCOPE.

VOL. X.

ST. LOUIS, MO., FEBRUARY, 1901.

No. 2.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

THE PNEUMATIC SINUSES IN THE SPHENOIDAL WINGS.

BY BEAMAN DOUGLASS, M.D., NEW YORK.

Professor of Diseases of the Nose and Throat, New York Post-Graduate Medical School
and Hospital; Pathologist and Assistant Surgeon Manhattan Eye and Ear
Hospital (Throat Department).

Accessory air cells in the sphenoid bone have been described by Zuckerkandl and Hajek. The authors noticed the two sphenoidal cavities, located in the body of the sphenoid bone, and also described in a very general manner the occasional presence of other pneumatic cavities, with nasal communications, developed in the smaller wings of the sphenoid.

A special study of these sphenoidal cells has never been published; the frequency, topography, relations and size have never been exactly enough described.

These facts were called to my attention by my highly respected teacher, Prof. Dr. E. Zuckerkandl, and at his suggestion I have conducted this study of the sinuses of the sphenoidal wings with the view of classifying and describing these sinuses, to show their relation to the ethmoidal cells and to other important structures, and to determine their importance in the work of the rhinologist.

The existence of these sinuses is a matter of importance not only from an anatomical, but from a surgical standpoint. They are of great interest to the rhinologist, who is daily confronted with the problems of accessory sinus disease, and who finds no class of cases more difficult to treat satisfactorily than the very obscure lesions of the posterior ethmoid cells and the sphenoidal sinus.

The sphenoidal bone is regarded by anatomists as a modified vertebral body, presenting all the general characteristics possessed by a vertebra. The particular form is modified, however, so as to



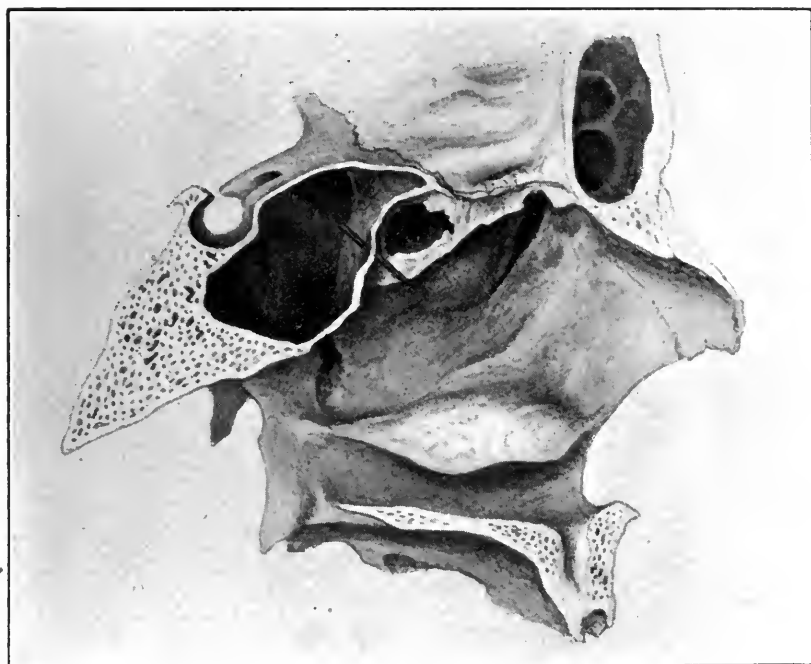
CASE I. Seen from Cranial Cavity.

(A) Accessory Sphenoid Cavity in Wing. (B) Sphenoidal Sinus Major—Left.
(C) Sphenoidal Sinus Major—Right.

make it a cranial bone. The point of interest to the rhinologist is that in early child-life the nasal mucous membrane pushes a projection or bud into the sphenoid which, enlarging and accompanied

by resorption of bone, forms two sphenoidal sinus, which at this stage have a large opening into the nose. This nasal opening is narrowed and the anterior wall of the sphenoidal cavity is formed by the development of the Bertini ossicles. The sphenoidal cavity thus formed is of variable size and a marked variation may be seen even in opposite sinuses in the same sphenoid bone.

Sphenoidal sinuses also vary greatly as regards their development forwards and upwards into the small wing of the sphenoid bone.

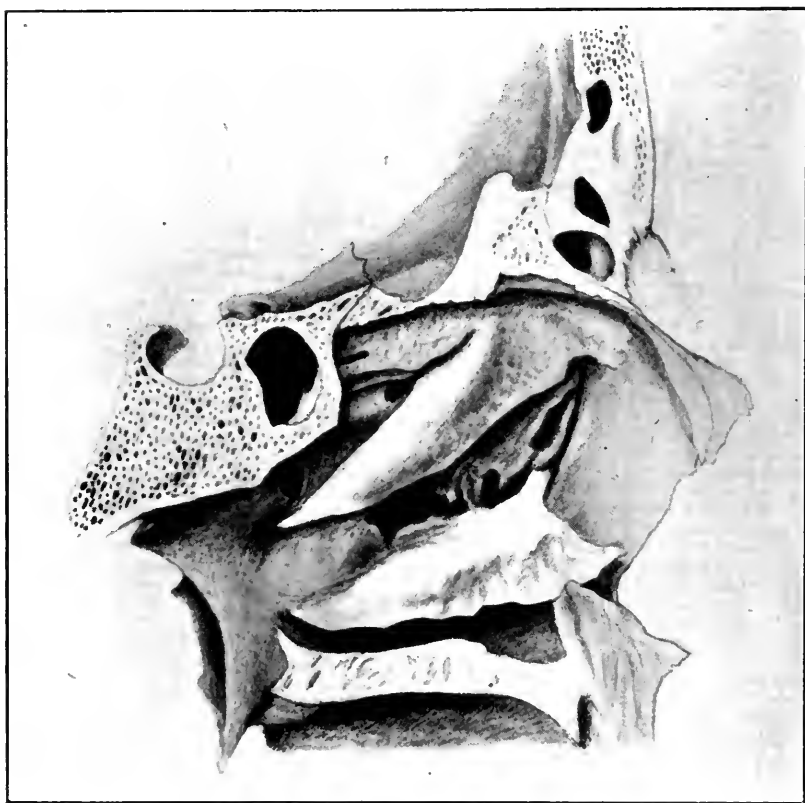


CASE III. Great Sphenoid Cavity Extending into Wing.

It is evidently nature's idea that the sphenoid shall be a *hollow bone* with pneumatic cells extending into the smaller wings as far forward as the fronto-sphenoid suture.

A small sphenoid sinus, speaking always of the adult skull, was one which measured 8 m.m. long, 5 m.m. wide and 10 m.m. deep; another small sinus measured 15 m.m. long, 10 m.m. wide and 10 m.m. deep. A large sphenoidal cavity was found to be 39 m.m. long, 19 m.m. wide and 25 m.m. deep. The small sphenoid sinus

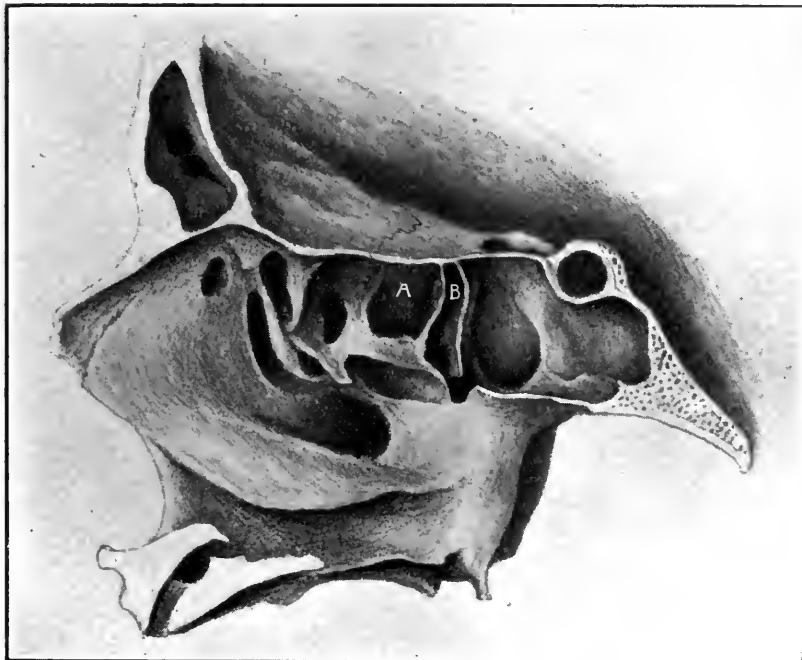
is generally confined to the body of the bone proper, while in the larger ones this cavity is increased by the sinus occupying the body of the sphenoid, and extending upward and forward into the small wings of the sphenoid. The space in these larger cavities is further increased by a noticeable bulging forward of the anterior wall of the cavity, the earlier cartilages of Bertini.



CASE IV. Sphenoidal Cavity Small, but Extends into Wing.

If it be true that the normal sphenoid should be as pneumatic as possible then we must consider as normal those skulls where the sphenoid cavity occupies the body of the sphenoid and extends forward to the fronto-sphenoidal suture, including the pneumatic space in the small wings of the sphenoid. In those cases where the sphenoidal cavity is small and does not hollow out the bone com-

pletely, the sphenoid may contain more pneumatic room, either by the opposite sphenoidal cavity developing unusually large, or other pneumatic cells may develop in the small sphenoidal wings, thus forming a true sinus of the smaller wing, or sometimes the posterior ethmoid cell may project well backwards into the sphenoidal area and occupy some space under the small sphenoidal wing. The first construction is much less common than the other two.



CASE V. Two Cells in Small Sphenoid Wing.

(A) and (B) Cells in Small Wing.

I have investigated the relations of the pneumatic cavities of the sphenoid in 200 cases and have found as follows:

I.—The great sphenoidal cavity may occupy only the body of the sphenoid without extending into the small wing. This was found in thirty-one cases.

II.—The greater sphenoidal cavity may occupy the body of the sphenoid, and other pneumatic cells, with a nasal communication, and lined with mucous membrane, may develop in the small sphenoidal wings.

This was found in seven cases, and represents the frequency of the occurrence of a true sinus of the smaller sphenoidal wings.

III.—The great sphenoidal sinus may develop in such a way that it occupies one-half the sphenoid body and extending into the sphenoidal wing may occupy it *entirely or partially*.



CASE VI. Posterior Ethmoid Cells Extending into Small Wings—Cranial View.

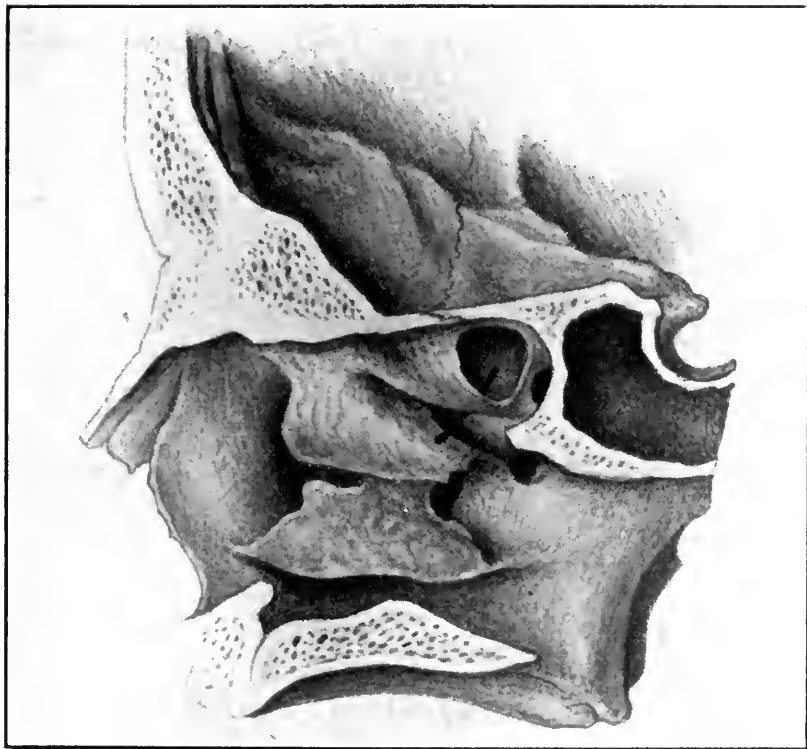
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| (A) Cell Extending in Small Wing. | (C) Sphenoid Sinus Major. |
| (B) Cell Extending in Small Wing. | (D) Sphenoid Sinus Major. |

This condition was found 169 times.

IV.—The great sphenoidal cavity may occupy the body and extend *partly* into the wing, in which case the whole or a part of the

posterior ethmoidal cell may extend backward into the small wing of the sphenoid. The sinus of the small wing of the sphenoid in these cases is not developed. This condition was found forty times.

V.—The greater sphenoidal sinus develops in the body of the sphenoid. The sinus in the small wings is also present. These sinuses of the smaller wings communicated on one side with the



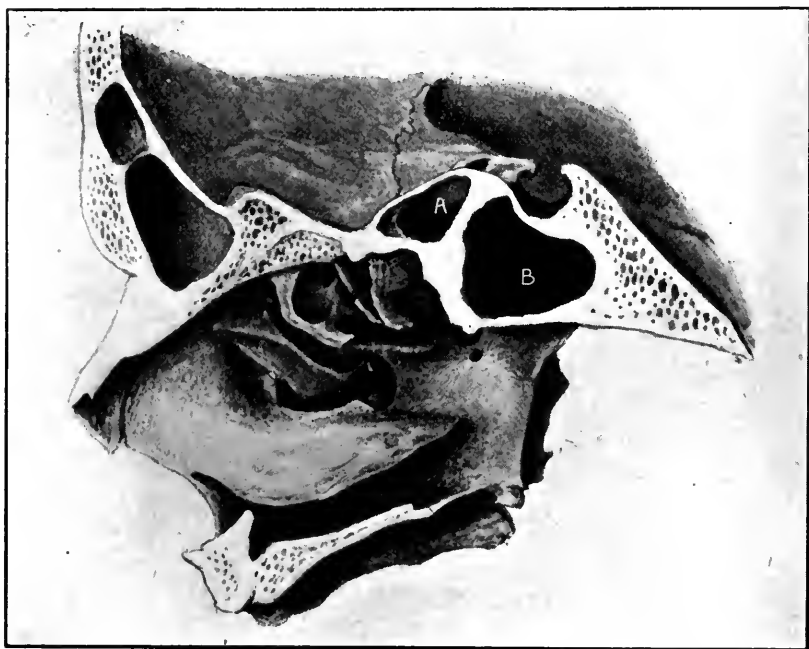
CASE VII. Small Sphenoid Wing, Forming Entire Roof for Posterior Ethmoid Cell.

posterior ethmoid cell and on the other side with the recessus sphenoidalis.

It seems then that in 15.5 per cent of all cavities examined the great sphenoidal sinus did not extend to the wings of the sphenoid, but was confined entirely to the body. In all of these cases the sphenoidal wings contained pneumatic cells, made so either by the development of a true sinus of the sphenoidal wing or else by the projection backwards of a posterior ethmoidal cell into the small wing.

In 3.5 per cent of the investigated cases could be distinguished a sinus of the small wing of the sphenoid which, in all cases but one, communicated with the posterior ethmoid cell.

In 84.5 per cent of the cases examined the great sphenoid sinus extended into the small wings of the sphenoid. In 4.5 per cent of the above cases the posterior ethmoid cell extended slightly backward into the region of the sphenoidal wings.



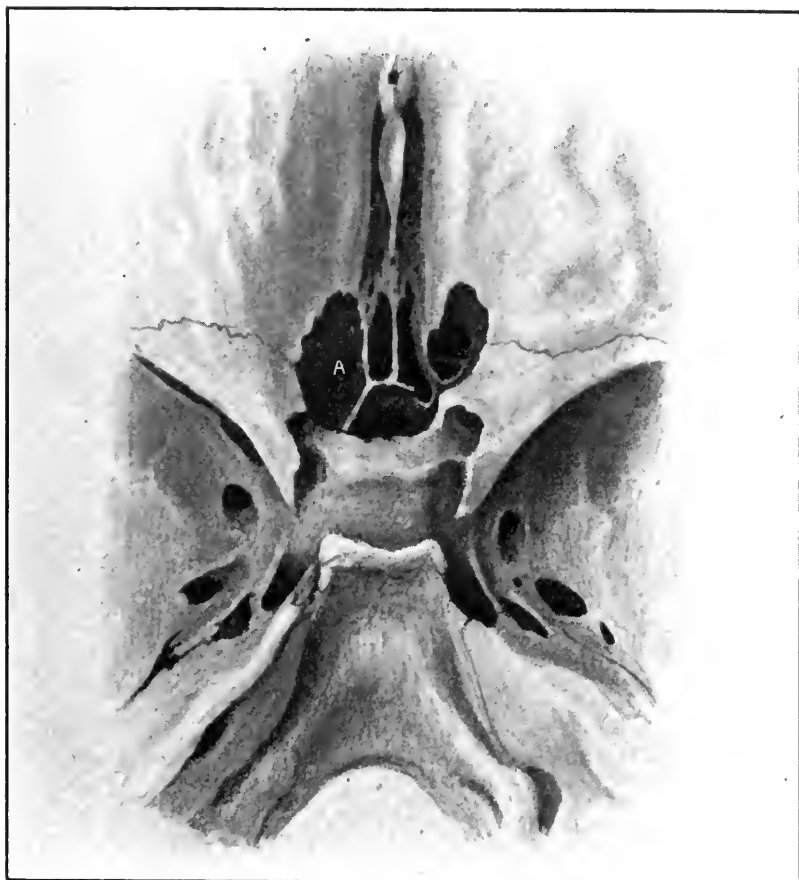
CASE VIII. Large Accessory Sphenoid Sinus in Small Wing.

(A) Accessory Sinus of Sphenoid Wing. (B) Main Sphenoid Sinus.

So far I have limited myself to a general description of the relations. In the following I desire to describe more in detail some examples of these sinuses of the sphenoidal wings which are worthy of attention:

Case I.—A Typical Sinus of the Sphenoidal Wing.—In this case the septum between both principal sphenoidal sinuses extends forward nearly in the median line. On the right side the sinus is large, occupies the body of the sphenoid and extends forward into the

small sphenoidal wings. This cavity is 30 m.m. long, 13 m.m. wide, 29 m.m. deep. On the left side are two sinuses, one the principal sphenoidal sinus, 15 m.m. long, 28 m.m. wide and 22 m.m. high, extending only a very little into the small sphenoidal wing. Above this cavity, and fully developed within the sphenoidal area, was a

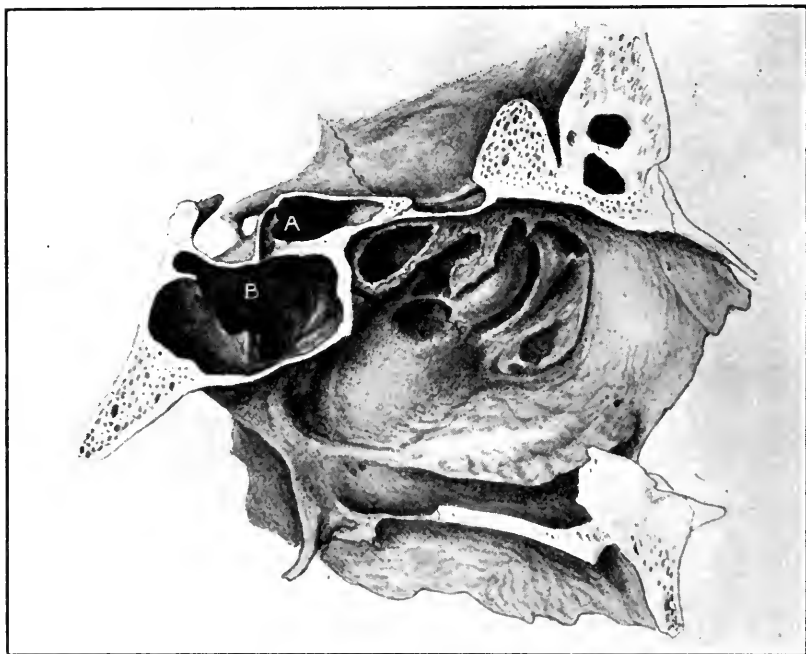


CASE IX. Left Posterior Ethmoid Cell (A) in Sphenoid Wing, seen from Cranial Cavity.

second pneumatic sinus, 12 m.m. long, 6 m.m. wide and 13 m.m. high. This sinus had its individual communication with the recessus speno-ethmoidalis. This is the only case where the cell in the small sphenoidal wing did not communicate with the posterior ethmoid cell. The nasal opening of the right sphenoidal sinus was

29 m.m. from its roof, while the left sphenoidal sinus major had a nasal opening 22 m.m. and the left accessory sphenoidal sinus 21 m.m. from their respective cranial walls.

Case II is an example of a sinus of the small wings with its nasal communication directly into the posterior ethmoidal cell. This accessory cavity measured 15 m.m. long, 14 m.m. wide and 7 m.m. high, and was slightly smaller than the posterior ethmoid cell into



CASE X. Sinus of Small Wing Lying Higher than Posterior Ethmoid Cell.

(A) Accessory Sphenoid Sinus. (B) Main Sphenoid Sinus.

which it drained. The opening of the great sphenoid cavity is normal. The sinus of the smaller wing is developed entirely within the small sphenoidal wing and does not extend into the ethmoid bone. The dividing wall between this sinus and the posterior ethmoid cell is exactly under the speno-ethmoid suture. The sinus is completely separated from the great sphenoidal sinus and equally separated from the posterior ethmoidal cell.

Case III.—The great sphenoidal cavity occupies the body of the sphenoid and the entire small wing and extends backward to the foramen rotundum. On its roof lies the canal for the optic nerve for the distance of about 1 c.m., together with the forward part of the sulcus carotidis. The wall of the sinus presses forward to the antrum of Highmore and presses the posterior wall of this antrum forward so as to form a protuberance in the maxillary antrum. The nasal part of the forward wall of the sphenoidal sinus is small; the ethmoidal part of this wall is wide and lies against the posterior ethmoidal cell.

Case IV.—The great sphenoid sinus is small and extends forward only to the border of the "sella turcica." It extends outward to the small sphenoidal wing as far as the canalis opticus. The remaining part of the small sphenoidal wings is compact.

Case V.—The great sphenoidal sinus is roomy and reaches posterior to the anterior border of the petrous portion of the temporal bone. The great sinus extends forward as far as the canalis opticus. With the exception of this cell formation the small wing is compact. The posterior ethmoid cell is small, but is placed so far posterior that the anterior half of the canalis opticus lies in relation with this ethmoidal cell.

Case VI.—The great sphenoidal cavity is large and extends outward and posteriorly as far as the foramen rotundum and the canalis opticus. A large posterior ethmoid cell extends into the small sphenoidal wing as far as the middle of the canalis opticus. The remaining part of the small sphenoidal wing is compact.

Case VII.—The great sphenoid sinus is small. The posterior ethmoid cell extends backward into the small sphenoid wing as far as the canalis opticus, in such a manner that the small sphenoidal wing forms the entire roof for the posterior ethmoidal cell.

Case VIII.—The roomy great sphenoid sinus extends to the foramen rotundum and to the sulcus carotidis. In the small sphenoidal wing a large accessory sinus is developed, which reaches from the median line, laterally, to the canalis opticus, and downward to the foramen speno-palatinum.

This accessory sphenoid sinus, together with the posterior ethmoidal cell occupy relatively a large space. It opens into the nose at the recessus ethmoidalis superior.

Case IX.—Both great sphenoidal sinuses are asymmetrical. The sphenoidal septum does not lie in the median line, but extends forward so much toward the left side that it meets the lateral wall of the left sinus.

The posterior ethmoid cell of the right side reaches as far back as the pars ethmoidalis of the sphenoid, while the posterior ethmoid cell on the left side extends into the small wing of the sphenoid as far as the canalis opticus. Here it extends between the sphenoidal sinus and the cranial cavity as far as the forward edge of the sella turcica. If we were to make a transverse section of this skull just one centimeter in front of the sella turcica we would see on the right side a large sphenoidal sinus, but on the left side instead of one sinus one would find two—a large superior sinus, which is the posterior ethmoidal cell developed in the sphenoid wing, and under this a smaller, the true sphenoidal sinus.

Case X shows the same relation as *Case VIII*, except that the communication of the sinus of the small wing with the posterior ethmoid cell is narrowed by the formation of a thin bony partition. It is worthy of notice that the roof of the sinus of the small wing lies higher than the roof of the posterior ethmoidal cell. One may conclude then that when the sinus of the small wing is extensive, its roof, which forms a part of the anterior cranial cavity, lies higher than the roof of the posterior ethmoidal cell, so that the observer can determine, in an open skull, whether the sinus of the small wing is present or absent.

The relations of these sinuses of the small sphenoidal wings is important. Above lies the brain cavity, the optic nerve and the optic chiasm, separated from the sinus by only a paper thickness (.5 m.m.) of bone. Below lies the nasal mucous membrane, and generally the anterior part of the great sphenoidal sinus with only a thin wall of bone separating the accessory from the great sphenoidal sinus. Anteriorly they lie in immediate relation with the posterior ethmoidal cell, whose posterior wall forms the anterior wall of these sinuses of the small sphenoidal wings. The most important relations are on the outer wall which is convex from above downward and over which runs the optic nerve. When this sinus is at all large it may have a very important relation with the carotid artery on its outer wall, and occasionally in the more anterior and inferior part of the outer wall a relation with the vidian nerve. The sinus wall may also form a part of the orbit wall.

The walls of the sinus are generally only .5 m.m. thick and are lined with mucous membrane and covered above with dura mater and in part below with nasal mucous membrane.

The practical bearing of these sinuses of the sphenoidal wings to the work of the rhinologist is that it is possible to have this cell diseased in either empyema of the ethmoid or sphenoidal regions

and the disease will persist in this sinus even when the ethmoid cells in front are cured. If during operation the measurements are used which have been given for finding the ethmoid cells this sinus will escape the cutting forceps and curette and the diseased mucous membrane will not be removed. Likewise in operations upon the great sphenoidal sinus this accessory sinus will not be treated either in case the larger sinus is washed out with the cannula or treated surgically with the curette. An encysted empyema of this sinus of the sphenoidal wing may cause optic nerve paralysis, press upon the carotid artery, paralyze the vidian nerve or sometimes cause orbital pressure. On the other hand, unless we remember the possibility of the occurrence of this sinus the rhinologist who is operating upon the posterior ethmoid cell may reason erroneously in case his instrument enters this sinus from the posterior ethmoid cell. If his instrument suddenly perforates a thin wall when he has been working in the posterior ethmoid cell, he must believe that he is either in the brain cavity or else in the great sphenoidal cavity. Both of these suppositions are evidently incorrect. Another practical point in clinical application is the danger in operating upon these cases of wounding the carotid artery, the optic nerve, the brain or the orbital structures. The danger of wounding the trigeminus or vidian nerves is slightest. These sinuses in common with the ethmoid cells may act as a causative agent in spreading infection to the optic nerve, brain or orbit.

Finally, the clinician may also remember that the relation of the posterior ethmoidal cells, either with the sinus of the smaller wing or with the great sphenoidal sinus, makes it possible for him to open these sinuses from the posterior ethmoidal cell. In pathological cases, where curettage and drainage of these cells and the sphenoidal sinus is necessary, the whole operation may be completed by continuing the removal of tissue backward through the posterior ethmoidal cell into the sinus of the small wing and thence into the great sphenoidal sinus, or else directly from the posterior ethmoidal cell into the sphenoidal major.

In some cases this may be an easier operation and not more serious than the usual place of opening the great sphenoidal sinus in the vicinity of its normal opening near the septum.

THE USE OF THE TUNING FORK AS A TEST FOR DISEASE OF THE MAXILLARY ANTRUM.

BY D. A. KUYK, M.D., RICHMOND, VA.

Except by surgical means we have no method of examination of the maxillary antrum that is quite positive or satisfactory, and even the surgical method of exploratory puncture through the nasal wall, owing to the bony formation of the wall or the location of the antrum, both of which vary so often, even in the same individual, will at times fail.

Take for instance a case in which the nostrils are so occluded by hyperplastic turbinates, with a badly deflected septum, with a malposition of the ostium maxillare preventing, even after the nostrils are rendered patent, direct entrance into the antrum, and yet there are many subjective and objective symptoms of antral disease, perhaps empyema, perhaps a growth of some kind.

There is a purulent collection in the nostrils, but this might as well come from the frontal sphenoidal sinus or the ethmoid cells.

Pain is produced by percussion over the antrum, but the patient is hysterical from attacks of pain, also through fear that something terrible will be done.

Transillumination gives a shadow on either side.

The patient fears exploratory puncture, in fact declines it.

Here are present the cardinal symptoms of antral disease with a history guiding us direct to that cavity: but how often are histories misleading? The responses to our tests are by no means infallible.

The dark spectre of doubt haunts the surgeon and causes him anxiety, almost fear.

If now we can employ yet another test, one that is simple and painless, one that will remove at least some of the uncertainties that always exist to a greater or less degree in most of these cases, a test that will most likely give us a fair amount of positive evidence, the diagnosis will be more easily made and the surgeon relieved of much doubt as to the correctness of it.

It is to testing with the tuning fork, over the antrum and the teeth, the first and second molars, that is referred.

If now the antra are free and clear the tuning fork (C. & Co. being preferably used) will be heard with equal distinctness and for a like duration over each side and in either location.

Let me say in parenthesis that it is not well to explain to the patient just what is expected of this or perhaps any other test.

If now one antrum contains fluid the fork will not be heard so distinctly, perhaps very faintly, perhaps not at all, as occurred in one case, but if the opposite antrum is free the patient replies quickly and positively in the affirmative.

Given another case in which the symptoms are obscure, but transillumination gives a shadow on the left side and none on the right, with subjective symptoms inclining one to suspect disease of the left side, the use of the tuning fork placed on the left side was heard louder and longer than on the right; the natural deduction was that the left antral wall was thicker than the right, thereby the better favoring sound transmission and thus almost conclusively eliminating this cavity as the offending structure, and so subsequently it positively proved.

Quite a number of healthy cases have been thus tested with but slight variation in the result of the findings, but the experience of one person is barely sufficient upon which to base positive assertions.

It is, therefore, the writer's object to call the attention of his confrères, especially those who have unlimited clinical material, to the possibilities of this test which, so far as he knows, has not been before employed, and to be by them further elaborated or perhaps, as so often occurs in the nature of all things, to be rejected.

The same test was used with much satisfaction in a case of frontal sinus disease; it might also be employed in examining for ethmoid disease; certain it is that in disease of the mastoid bone conduction is much diminished if not altogether destroyed.

It is much to be hoped, alike for the benefit of the patient as well as for the surgeon, that this test will prove helpful, for if it does it will most certainly aid in clearing up some of the doubts of the diagnosis of disease of not only the maxillary antrum but of other superficially situated cavities.

EXTRADURAL ABSCESS FOLLOWING ACUTE SUPPURATIVE TYMPANO-MASTOIDITIS, WITH REPORT OF TWO CASES.*

BY JAMES FRANCIS M'CAW, M.D., WATERTOWN, N. Y.

Oculist, Aurist and Laryngologist to the City Hospital, Jefferson County Orphan Asylum;
Fellow of the American Laryngological, Rhinological and
Otolological Society, etc.

While external pachymeningitis with extradural abscess gives the greatest number of recoveries, after proper surgical treatment, of any of the intracranial complications following suppurative disease of the middle ear or mastoid cells, it is of sufficient interest to be brought to the notice of this society, in the report of two cases which recently came under my observation, and again call attention to the great importance of early and thorough surgical interference in all cases of acute suppurative mastoiditis. The cases I have to report I was called to see in consultation on March 7, 1900.

Case I.—Male, age fourteen years.

Acute suppurative otitis media; mastoiditis; extradural abscess; multiple operations; recovery.

Family history negative. Had never had ear trouble. For about two weeks prior to my seeing him had suffered from an attack of influenza, principally affecting the nose and upper respiratory passages. For several days there had been an unusual amount of bloody mucus nasal discharge. Thirty-six hours before I saw him, he was suddenly seized with excruciating pain in the right ear and radiating over the entire right side of head; no discharge from ear. Dullness of hearing gradually developed. Palliative measures, such as heat, cathartics, etc., had been used, but without relief.

Examination: patient's face flushed, facies indicative of great suffering, both nasal chambers extremely congested, swollen and small erosions of the mucous membrane with slight bloody oozing. The pharynx and naso-pharynx in practically the same condition, except no erosions could be seen. Right ear, canal partially occluded by dead epithelium, which also forms a covering for the membrana tympani. With a cotton-tipped probe this was cleared away, showing the membrane intensely congested over the entire

* Read before the Jefferson County Medical Society, July 10, 1900.

surface and bulging. No redness or swelling over the mastoid region, and only slight tenderness on deep pressure over the tip. Left ear negative. Temperature 103° ; pulse 120.

He was sent to the hospital, and under general anesthesia an incision into the membrana tympani was made with a free discharge of pus. The aural ice bag was ordered over the mastoid and the ear syringed every two hours with a warm carbolic acid solution. For the four days following, the range of temperature was from $99\frac{2}{5}$ – $103\frac{1}{5}$ °; pulse 78–105, with a copious, thick, purulent discharge from the ear, which could be seen to come from the direction of the attic. Membrana tympani again freely incised and carried well up into the attic. Syringing kept up, ice bag discontinued, as the mastoid tenderness had about disappeared.

From this time the case progressed favorably till March 16th, when his temperature rose suddenly, marking 103.8° at 9 a. m.; 104.8° at 11 a. m.; 105° at 3 p. m., and 105.2° at 5 p. m. Slight mastoid tenderness on deep pressure, more marked at the tip, no swelling or redness. The postero-superior canal wall close to membrana tympani was very little changed, membrane bulging at upper posterior part, the opening into the membrane pouting and teat-like, with no attempt at repair. In view of this sudden change in his condition it was thought inadvisable to delay longer, so that after the usual preparation the mastoid cells were opened, following the method of Schwartz. The antrum and cells were found filled with pus. The bony septa were broken down and the cells thoroughly curetted together with the aditus and antrum, establishing free communication with the attic. It was *thought* at this time that a very thorough operation had been done and all diseased tissue removed. Patient complained of some pain following the operation, and the next day (March 18th), twenty-four hours after the operation, his temperature reached 104° . Wound was dressed and slight amount of pus retention found. This was washed out thoroughly with mild bichloride solution and an antiseptic dressing reapplied.

March 22d. There has been a copious purulent discharge from the middle ear for several days, temperature from 100.4 – 103.8° ; pulse 80–100, some tenderness and slight swelling immediately above the external auditory canal, otherwise patient is very comfortable. In view of the run of temperature and the continued copious purulent discharge it was thought wise to do a further exploratory operation. Accordingly the primary wound was enlarged, the incision being carried upward, then forward to the

zygomatic arch. The fibro-cartilaginous canal and periosteum were separated from their osseous attachments and divided transversely close to the membrana tympani.

During this step of the operation about a half drachm of pus was evacuated from between the periosteum and superior canal wall. The bony partition between the attic and mastoid antrum was now removed, converting them into one cavity. There was twitching of the muscles of the corresponding side of the face, during this procedure, indicating close proximity to the facial nerve, which, however, was not injured as no untoward effects followed. Wound was dressed in the usual manner and the patient put to bed at 1 p. m. At 5 p. m. his temperature was 104.6° ; it gradually fell from this time till the following morning at 9 o'clock, when it was 97.8° . For one week following this procedure there was epigastric pain, persistent vomiting and gradual exhaustion. On the fourth day there developed pain in the left hip and muscles of the thigh, dysphagia and slight swelling and tenderness over the larynx. No fluctuation detected. Voice clear and laryngoscopic examination negative.

On the eighth day he complained of pain and stiffness in the muscles of the neck. Temperature remained normal for three days, then ranged from 99.8° to 101.8° , until the tenth day, when it rose to 103.4° in the evening, with restlessness, delirium, crying out of pain in the hip and spitting constantly. The following morning the posterior group of thigh muscles was in almost tonic spasm. Thigh flexed on the trunk and leg on the thigh. Any attempt to disturb this position elicited great pain. Right leg negative. The dysphagia and swelling over the larynx disappeared in two weeks. Stiffness in the muscles of the neck, pain in the left hip, spasm of the thigh muscles, nocturnal delirium, but perfectly rational during the day, increasing exhaustion, and temperature range about as above recorded continued, until April 12th, when there was added to this train of symptoms, headache, slight tenderness above the mastoid antrum and over the occipital region. Ophthalmoscopic examination showed the eye grounds to be negative. From this array of symptoms it was evident there had been an extension of infection to the intracranial contents. Therefore after thorough preparation the wound of previous operation was enlarged backward and downward, exposing the sigmoid sinus, which could be felt to pulsate and otherwise healthy. In cutting away the bony covering to the sinus it was punctured by a spicule of bone, free hemorrhage followed; but was easily controlled by iodoform gauze tampon. The wound in

the bone was still further enlarged posteriorly, exposing the surface of the cerebellum; the dura mater was incised and punctures made in several directions, but without result. Enlarging our wound upward a small epidural collection of pus and debris was found just above the tegmen antri. The opening through the tegmen was enlarged and the cavity lightly curetted. The wound was packed with iodoform gauze and a large antiseptic dressing applied.

The patient suffered very much from shock, but rallied gradually under hot saline enemata, cardiac tonics and external heat.

From the time of the last operation the patient's symptoms improved. Except for a cellulitis of the prevesicle space his condition was good. He was discharged from the hospital eleven weeks after the commencement of his attack with only a small sinus in the mastoid region.

An interesting feature noticed in this case was a peculiar ataxic gait. In walking the legs were spread, and to raise the leg the body was tilted to the opposite side, producing a waddle. He was also unable to raise his legs from the chair when sitting, without the assistance of his hand. This gradually improved and is very little noticed at present. The question that suggests itself to me is: Could there be any relation between this and the exploration of the cerebellum?

Case No. II.—Male, age nineteen years.

Acute middle ear suppuration; mastoiditis; perisinus extradural abscess; operation; recovery.

Indications for operation were the long-continued profuse discharge with a suspicion of mastoid tenderness.

This case was first treated for acute suppurative otitis media following grippe, the symptoms of which subsided after free paracentesis of the membrana tympani, except that a very profuse discharge continued. This did not, however, incapacitate the patient for work, as he attended to business up to the time he was sent to the hospital for operation. Finally after waiting six weeks for the discharge to cease, and with this and the slightest suspicion of mastoid tenderness as the only indications, aside from a slight afternoon rise of temperature to 100°F. for two days before operation, I operated and found the whole mastoid in a very necrotic condition and filled with pus. The inner mastoid cortex had entirely disappeared, exposing about half an inch of the sigmoid sinus, which was surrounded by and bathed in pus and necrotic tissue. The facial canal as it passes along the floor of the aditus and antrum was involved in the carious process and the nerve was injured in its

removal, producing a slight facial paralysis. From this time on the patient made an uneventful and unusually rapid recovery. The facial paralysis had entirely disappeared four weeks after the operation.

This case demonstrates the treacherous and insidious nature of the disease and illustrates why delay is dangerous. With the entire destruction of the mastoid, and the sigmoid sinus surrounded and bathed in pus, this patient was attending to his business up to the very day of the operation, and it was difficult for him to understand that an operation was imperative.

Pyogenic diseases of the brain, complicating suppurative otitis media and mastoiditis, is of the greatest importance to us, not only as otologists but as general physicians; for the "family doctor" is usually the first consulted, and upon his ability to recognize and differentiate between the many conditions that might occur in this region, and the appreciation of the disastrous results when not dealt with promptly, will depend the well-being of his patient. Manifestly, then, there is great necessity of a thorough examination in all cases of suppurative middle ear diseases with a view of determining the extent of the process, and especially so in cases complicating influenza, as I have come to look upon this particular infection with greater anxiety regarding the dangerous complications than any other we have to deal with. When once beyond the tympanic cavity its virulence is shown by rapid destruction of the mastoid walls, and if not relieved by surgical interference is apt to involve the meninges or brain in a purulent inflammation.

From the investigation of 1,750 cases of suppurative ear diseases, Teichmann found that the suppuration, influenza-otitis, almost always runs an acute course up to the inception of the dangerous complication, while in the otitis of measles, diphtheria and tuberculosis it runs a chronic course.

Knapp also says: "The grippe is a frequent cause of mastoid caries." Where there is a very rapid destruction of the internal or posterior wall of the mastoid or the tegmen antri there is apt to be a rapid disintegration of the dura mater and arachnoid membrane, opening the way for a general septic meningitis.

In this class of cases there is not sufficient time for adhesions to form between the membranes, and when the septic material passes beyond the arachnoid, general lepto-meningitis is inevitable, as the infection is then within the sub-archnoid space and beyond our control.

Fortunately only about one-quarter of the intracranial complications follow acute suppuration of the middle ear, while chronic otorrhea is responsible for three-quarters.

Macewen in his work on pyogenic diseases of the brain and spinal cord, page 293, says: "Acute purulent otitis media seldom occasions intracranial complications. When such occurs, the invasion is generally so rapid that the intracranial involvement occurs before opportunity is given for radical intervention, though direct and prompt application of antiseptics to the middle ear and mastoid antrum and cells aids in preventing the further extension."

In suppurative otitis media or mastoiditis, either acute or chronic, from which there is an extension to the interior of the skull, the alternative, whether a localized pachy-meningitis with extradural abscess, general lepto-meningitis or brain abscess results, depends upon the nature and virulence of the infective agent or micro-organism and partly upon the intensity and rapidity of the inflammatory action.

External pachy-meningitis, with epidural abscess, is the result, usually, of a primary focus of infection from without and this infection in the large majority of cases is a suppurative inflammation of the middle ear, mastoid antrum or cells. How important then prophylaxis is in considering the treatment. Acute purulent otitis media should not be treated in a temporizing manner, as a great many physicians are in the habit of doing; our best efforts should be exerted to arrest it before extension to any of the accessory cavities and thus do away with further possible complications. Chronic suppuration of the tympanic cavity with ulceration of the mucous membrane and caries, which are the usual accompaniments, is of paramount importance in the prophylaxis of intracranial infective diseases. It is a constant menace to the life of the individual, and none of us can say when a dissemination of septic material may take place, producing some form of pyogenic brain disease, jeopardizing the life of our patient, and oftentimes putting him beyond the border line of safety. Chronic otorrhea should not be regarded too lightly or considered an inconvenience or troublesome sequela; but it is our duty as physicians and advisers of public health, to impress upon all patients the great importance of having such conditions properly attended to and in that way do a great deal toward reducing the mortality of infective brain disease.

Why physicians in general have been slow to recognize the importance of chronic purulent otitis media or mastoiditis as bearing upon the etiology of suppurative brain diseases, I cannot understand,

for anyone familiar with the anatomy of the parts, and the pathology of the disease, is forced to recognize its dangerous nature.

In all cases of continued chronic purulent discharge from the middle ear, the attendant should not be satisfied until the discharge is cured. An otherwise incurable otorrhea must be regarded as a proper indication for surgical measures so soon as it can be determined that its origin is somewhere outside the tympanic cavity. A supervening mastoiditis should be an imperative demand for surgical interference; by that I mean radical; search for and thoroughly eradicate every focus of infection and vestige of carious bone; by doing this you will not only eliminate the possibility of further extension, but you will lessen by weeks your patient's convalescence and save life by what was apparently a radical and uncalled-for procedure.

The two cases reported in this paper are an ideal object lesson, as they were seen at the same time, under the same conditions and received the same treatment with this exception, that in Case I at the primary operation I was not as thorough as I might have been and thus allowed time for disintegration and extension of the process and the undermining of the patient's strength from septic absorption which necessarily reduced his recuperative power and prolonged his convalescence; whereas in Case II a thoroughly radical and extensive operation was done, which at once arrested the disease and greatly lessened the period of convalescence.

In conclusion, I would emphasize that in suppurative diseases of the middle ear, we should be alert to the desirability of a permanent cessation of the discharge, and in mastoiditis the thorough opening of the mastoid cells and eradication of all diseased tissue; for this is our sheet anchor in the prophylactic treatment of pyogenic brain diseases. After extension to the brain or its membranes has occurred radical surgical intervention holds out the only hope of recovery, and is to-day the only recognized treatment.

No. 35 Washington Street.

NECROSIS OF TURBINATED BONES AND ADJACENT STRUCTURES.

BY J. W. BIRD, M.D., STEVENS POINT, WIS.

The following case is somewhat out of the ordinary, and, to say the least, a particularly interesting one:

Mr. S., age thirty-four, strong and healthy in appearance, presented himself for catarrhal treatment at my office, July 7, 1899.

Personal History.—Had had a purulent and bloody discharge from the right nostril for about five years, with pain more or less severe, at frequent intervals.

No knowledge of acquired or hereditary syphilis.

Several years before had received two severe blows on the nose, but not considered serious.

Family History.—Father died of pneumonia at sixty-four years of age. Mother living and in good health. One sister died of pharyngeal tuberculosis at twenty-three years of age. Two brothers died of consumption at twenty-five and twenty-seven years of age respectively. Other children of the family living and in good health.

The patient had used the usual array of catarrhal specifics with no relief; but had never consulted a specialist.

Upon examination the nostril was found to be nearly filled with dried blood and pus, and the debris of the broken-down inferior turbinated bone.

The cotton applicator was all that was necessary to remove some fragments of necrosed bone, and the diagnosis was easily made.

The necrosed bone in illustration No. 1 was removed with the first operation, which consisted of thorough curetting, and the use of nasal burrs to remove all diseased bone.

The operation was followed by the daily use of antiseptic sprays, peroxide of hydrogen and a dressing of aristol.

Immediate relief followed this procedure, lasting till about January, 1900, when all of the symptoms were greatly exaggerated.

Purulent discharge much increased, severe pain in nose and side of head, and swelling on right side of nose, extending up to the eye.

These local manifestations were accompanied by fever and night sweats.

An examination revealed an opening from where the inferior turbinated had been detached through to the antrum of Highmore.

The antrum was syringed with peroxide (50%) solution and resorcin (20%) solution for several days.

Exposed bone could be found, but antrum infection seemed to be the important feature.

No improvement followed the antiseptic treatment of the antrum, and in March, 1900, a second operation was resorted to for the removal of necrosed bone.



No. 1.

No. 2.

The bones, No. 2 in the illustration, were removed, and they comprise all of the superior maxillary that form the outer wall of the nostril and the base of the antrum of Highmore.

After the sequestrum was removed the cavity was curetted and peroxide of hydrogen and resorcin solutions were used daily for about three months.

At the time of the second operation the patient was put upon potassii iod., 15 grains a day, and this increased to 60 grains a day, and continued for three months.

Three months after the second operation the patient was practically well, and at present, November 1, 1900, has no trouble with the nose and feels better than at any time for the past six years.

SOME NOTES ON ROUTINE OFFICE WORK.

BY E. C. ELLETT, M.D., MEMPHIS, TENN.

Formerly House Surgeon in Will's Eye Hospital, Philadelphia; Ophthalmic and Aural Surgeon to St. Joseph's Hospital, the Children's Home, the Lucy Brinkley Hospital, the City Hospital and the Shelby County Poor and Insane Asylum, Memphis.

RECORDS.

Numerous systems for keeping records have been devised, and from the number each practitioner probably gradually evolves the one best suited to his individual needs. The case book was the first system that I used, and after deserting it, returned to it. I have now finally discarded it, as the best made books wear out from much handling, the method is not sufficiently elastic, and is not as convenient to handle as a system of separate sheets. In using the sheets, I first used plain sheets of letter size paper in tablets, filing them in letter files. Printed blanks save some writing, and having blank spaces for certain data is conducive to more systematic and hence more thorough habits in the matter of record making. An unfilled space stands as a mute witness to the fact that the examiner was remiss in a certain particular. My blanks are printed and put up in tablets, two in number, one for eye examinations (with which this article does not deal) and one for the ear, nose and throat.

EAR, NOSE AND THROAT.

Date	
Name	Age
Res	
Referred by	
A. D. w.....in wh.....v.....	Galton.....low. tone.....Rinné.....
A. S. w.....in wh.....v.....	Galton.....low. tone.....Rinné.....
Ossic. Mob. { A. D..... { A. S.....	Eus. Tubes { A. D..... { A. S.....
M. T. { A. D..... { A. S.....	
Tinnitus	
Nose—R	
L	
Naso-Pharynx.....	
Oro-Pharynx.....	
Larynx.....	
History, Etc.	

The chart, which is here reproduced, is self-explanatory.

More elaborate charts, even separate books, have been devised, but I find the information recorded on mine is sufficient for all purposes, and to write a book about each patient leaves but little time for treatment, especially as it is the experience of most otologists that they must keep their own records if they are to be of any value. Under the head of "history" the salient points are briefly noted, and what is not put down as present is supposed to have been absent. For instance, if it is not stated that a patient has an otorrhea it is taken for granted that he has not, and so with other facts. If no abnormality is found in the right nostril, or naso-pharynx, or left ear, as the case may be, a simple "O. K.," in the appropriate space, means as much as a lengthy statement that the parts are normal and certainly saves much time.

Letters from patients are pinned to their history sheet, as are reports from pathologists, other physicians, letters of introduction, etc. Both sides of the sheet may be used for the record, and other blank sheets pinned on will make each record indefinitely extensible. If more extensive tests of hearing with a series of tuning forks is made, they can be recorded in the "history" space or on the back of the sheet. The tests provided for will give all the information necessary for diagnosis in the vast majority of cases.

These sheets are filed in an upright wooden letter file containing drawers. When one such file is filled another can be obtained, and the lettering on the drawer pulls changed to give, if necessary, two or more drawers to a letter.

The interior arrangement of the drawers gives such a subdivision under each letter that a record is readily found. I believe that this system for convenience, small expense and, above all, elasticity, is superior to any that I have seen in use by other physicians. Of course I claim no special originality for it.

ILLUMINATION.

Some advantages may be urged in favor of each, daylight, electricity and gas, and each has disadvantages. Daylight is often not convenient, and is always variable. In using the electric light, a frosted bulb is necessary to eliminate the line-like images of the filament. This lessens the illumination materially.

The electric and argand light alike give a red color to all mucous membranes, making it difficult to detect slight changes and areas of greatest intensity of inflammation. Electric head-lights are rather cumbersome, not readily portable and prone to fail one at inopportune moments. In office work I have found the Welsbach

light, covered by a mica chimney (unbreakable) and over this a fenestrated asbestos chimney cover, to give the advantages of intense illumination and a light which closest resembles daylight.

It is a very hot light, but it is not readily affected by the breeze of an electric fan, provided this does not blow directly on the light. It is by far the most serviceable light in my experience.

In hospital and bedside work I prefer a frosted electric lamp attached to a long wire with plug. Most houses and all institutions are fitted with electricity, and this apparatus is easily carried in the satchel and can be used with the patient in any position and in bed, cannot be upset, and is not objectionable when ether has to be administered.

The mirror mounted on a head band has the advantages of absolute portability in and out of the office and I therefore prefer it to the fixed "laryngoscopes."

APPLICATORS.

It is astonishing what unsatisfactory applicators are put on the market. For nasal work I prefer one with a short (one inch) octagon metal handle, a heavy wire, with the "business end" either ground triangular or deeply grooved longitudinally. These forms catch the cotton readily, hold it pretty firmly yet permit of its being pulled off with sufficient ease. The ones with deep grooves are by far the best. The short handle gives a much more delicate touch than the long ones.

For post-nasal use I have an aluminum uterine probe cut off, turned up and the turned up part filed to a triangular shape.

For laryngeal use the cotton carrying end had best be irregularly roughened, made spiral or perforated, as Lenox Browne suggests, for threading on a cotton tuft. These forms prevent the cotton from being pulled off, a serious accident in the larynx, though less so in the nose, ear or naso-pharynx. The cotton, after use, must be burnt off from the laryngeal applicator. For use in the ear my choice is for a much shorter applicator than is in general use. The wire is but two inches long, the handle one inch, as for nasal use, the distal inch of the wire in both cases being grooved for holding the cotton. Especially for aural use should the cotton tuft project well beyond the end of the wire to avoid accidental injury to the drum.

THE USE OF THE CATHETER.

In placing the catheter I have found much satisfaction in always using the rhinoscopic mirror. The patient holds the tongue de-

pressor, and with the mirror in one hand and the catheter manipulated by the other, the tube mouth is brought in view and the catheter placed snugly at once therein. Prodding and scratching the pharyngeal walls is avoided, and the certainty exists in the operator's mind that the beak of the catheter is where it should be. Practically all patients readily acquire the knack of relaxing the velum sufficiently to permit this, especially if the fauces are first brushed with a weak cocaine solution.

In inflating with the catheter, the compressed air tank is used. By using an old style cut-off, *i. e.*, not an "instant cut-off," a very feeble stream of air can be permitted to escape and its force increased at pleasure regardless of the pressure in the tank at the time. The "instant cut-off" work only when fully open and are for this purpose undesirable. By attaching a Buttle's inflator to the cut-off, any medication of the tube and tympanic cavity can be carried out. I have once ruptured an ear drum by using the compressed air connection with the catheter, but I have also done the same thing with the Politzer's air bag on one occasion. It is not an argument against the method.

INSTRUMENTS.

Instruments, except those in daily use, are conveniently kept in cases provided with glass shelves. Many instruments are packed in the small wooden boxes used for sending spectacles in the mail, the boxes being labeled on the ends and packed in tiers. They are thus easy to get at and fully protected from dust, etc.

COCAINE.

A morbid fear of contributing in some degree to the formation of the cocaine habit in some individual, has led me to keep the cocaine solution on my treatment table in an unlabeled bottle.

The curiously inclined have thus no way of seeing what the drug is. As this is the only unlabeled bottle on the table, there is no danger of confusing it with anything else, and if any meddlesome individual wants to sample it, it is his lookout and not mine.

ANTISEPSIS.

Besides cleansing my specula and treatment instruments by boiling and washing, they are given a bath in a bowl of formalin before each use. This bowl is on the table and I frequently tell patients what it is and why I use it, since it does no harm to let them know that these precautions are constantly taken against

communicating disease and it may serve to remove suspicion from you in case one of your patients should acquire (elsewhere) a chancre of the lip or some such lesion. The real avoidance of such a crime is of course the potent reason for these or similar precautions.

NAPKINS.

After trying various materials, I have had J. Elwood Lee & Co. make me gauze napkins, eight inches square, of two thickness of gauze, and hemmed to prevent the lint adhering to the clothing. They cost \$18.00 a thousand, and are destroyed after use.

The expense is more than compensated for by the pleasure you and your patients derive from their use. But the expense can be reduced by having them made at home from ordinary cheese cloth.

If the pieces are cut 8x16, and the threads so pulled as to make a fringe about one-eighth of an inch deep on the edges and this folded, it gives a napkin eight inches square, double thickness, and not liable to leave threads to escape and catch on the patient's clothing. The cheese cloth is softer than "sterilized gauze" and these napkins cost much less than those procured from the manufacturers.

I trust that some of these points, gathered and worked out in some nine years of practice, may be of benefit to others, not only beginners, but those who have met with some of the difficulties and disadvantages which I have tried with some success to eliminate.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, December 26, 1900.

WENDELL C. PHILLIPS, M.D., Chairman.

Papillomatous Growths.

DR. EMIL MAYER presented some papillomatous growths which had been removed from the larynx of a gentleman, thirty years of age, seen by him on January 2, 1900. He had been hoarse since the previous October. The growths had been found all over the larynx. He was under treatment from January to July, and at almost every one of forty sittings some of the growths had been removed. His voice had returned ultimately, and at no time had there been any recurrence of the growths. Several examinations and reports had been made by the pathologist of the New York Eye and Ear Infirmary, and always to the effect that they were benign in character. The case was interesting because it was rare to see so many papillomatous growths.

Epithelioma of the Larynx; Total Laryngectomy.

DR. J. W. GLEITSMANN presented a case of epithelioma of the larynx, together with the specimen. On section of the larynx there was shown a mass, which proved to be epithelioma. The right side of the larynx was absolutely intact, and when he had sent the patient to Dr. Gerster it had been for an unilateral laryngectomy. During the operation an extraneous gland had been found which was infiltrated with cancer, and it was for this reason that the surgeon had decided to excise the whole larynx. The patient was a man, sixty years of age, who in July had first experienced an abnormal fulness in the throat. The voice became weak and husky. Laryngoscopic examination showed diffused infiltration of the left arytenoid region, but nothing on the right side. He had deeply excised three pieces and submitted them for examination, and they had proved to be epithelioma. The operation was performed on November 30th, and was done in one session, first low tracheotomy

was made and then the larynx extirpated with hanging head. The man had been fed by the rectum until December 3d, and then for a few days by catheter.

DR. GLEITSMANN presented a second case. The patient had been first seen in July, and his tuberculous infiltrations were curétted three times during the summer. In the latter part of September the pain had returned, and his general condition had deteriorated. He had then begun treatment with parachlorphenol and had kept it up, two or three times a week, using it after thorough cocainization. This remedy had proved a failure in more than one case, but he thought the present one would have succumbed long ago for lack of proper nourishment had this treatment not been carried out. The patient had taken kalagua for the past three months (to be exclusive of all other remedies) and had gained over twenty pounds.

DR. WENDELL C. PHILLIPS said that three years ago he had presented a partial laryngectomy on a very recent case of epithelioma of the larynx, only one-third of one of the vocal cords having become involved. Nearly four years after the operation he had seen the case and the man was then in perfect health.

The diagnosis in this case had been made at a very early stage of the disease, which no doubt accounted for the success of the operation. The success of this case had tended somewhat to overcome his scepticism as to the benefits of operative procedure, in general, in these cases.

DR. R. C. MYLES said that he had had a case conjointly with a general surgeon, Dr. Bodine, almost identical with the one presented by Dr. Gleitsmann. A complete Solis-Cohen operation had been done, and for the first three or four weeks there had been much trouble with the nerves of respiration apparently on account of the dryness. About one year afterward he had been in fair health, and he had ultimately died from malignant disease of the stomach, but without recurrence in the larynx. On account of his experience in this case he would like to know whether Dr. Gleitsmann had encountered the same suffering after the operation. If not, then he would be very much encouraged in the use of this operation.

A Subglottic Papilloma.

DR. FRANCIS J. QUINLAN presented a characteristic papilloma of the larynx of the subglottic type. The man had had huskiness without dyspnœa for two or three years. In the previous two or three months he had acquired syphilis, and this had greatly intensified the

laryngeal congestion and promoted the development of these wart-like masses. Several have been removed by the Schrötter forceps at each sitting and the parts touched with Donovan's solution. No new growths visible and the others apparently undergoing atrophic change.

Tertiary Specific Disease.

DR. J. E. NEWCOMB presented a man who had had his initial lesion about ten years ago. About three years ago the destructive process had commenced, and had been aggravated by a severe injury to the jaw bone. The roof of the mouth had been so thoroughly destroyed that it was possible to look up directly into the antral cavities. The man had worn an obturator for a time and had done fairly well, but he had lost it and had not been able to procure another. With it in position the voice was fairly intelligible. The case closely resembled one that had been presented to this section a few years ago, but he had taken pains to assure himself that it was not the same case.

Lymphadenoma Cervicis.

DR. MYLES presented this case, and asked for an opinion regarding its probable pathology and as to the best procedure under the circumstances. The growth had been first noticed behind the tonsils, in August. The cervical glands had been removed by a surgeon, but no microscopical report was obtainable. The fungating mass was probably caused by the protrusion outward of the tonsil under tension. The question arose as to whether it would not be better to tie the carotid artery and do a thorough operation. If it were a sarcoma and all of the glands could be taken out he saw no reason why the case could not be cured. He had had two sarcoma cases, one of which had survived for five years, and the other for three years. The growths had been of a most malignant type of sarcoma, and the prognosis, as given by competent pathologists, most unfavorable. He would make an incision behind the tonsil and obtain a specimen from the deeper part of the tumor for microscopical examination, as a specimen from the cauliflower-appearing surface had demonstrated it to be tonsil tissue.

DR. M. D. LEDERMAN said that he had reported some years ago a case in which a small round-cell sarcoma had occupied the right side of the nose, and had filled up the posterior nares, being attached to the sphenoid. Both external carotids were tied before any radical

operation was done, to see the effect of this procedure. The growth was reduced about two-thirds in consequence of this. Later on the growth started to increase somewhat in size, and Dr. Dearborn performed a resection of the superior maxilla and removed the sarcomatous mass.

These operations are very bloody, and it is a good surgical principle to ligate the external carotids to prevent excessive hemorrhage, and at the same time to deprive the area of its blood supply.

This patient made a very good recovery, and was free from the disease three years after the operation.

DR. T. PASSMORE BERENS said that the growth was apparently an adeno-sarcoma. He did not see any necessity for removing the glands externally and then the tonsil internally; both could be easily removed through the same external wound.

DR. E. MAYER said he did not feel that in this case there was normal tonsillar tissue pushed in, but rather that the mass was an endothelioma of the tonsil. He had seen such a case, which was operated upon, and the patient had died within a year from a recurrence in another locality. He would certainly advise external operation, doing all at one sitting.

Supplementary Report on a Case Already Reported.

DR. T. R. CHAMBERS said that he had presented at the last meeting a case diagnosed as adenoma of the nose, though there had been a suspicion of syphilis. The man had since been put on mixed treatment, and as a result the tumors had disappeared.

In Memoriam, Dr. Rufus P. Lincoln.

DR. D. BRYSON DELAVAN delivered this address.

Papilloma of the Larynx.

Paper presented by DR. FRANCIS J. QUINLAN. This paper will appear in full in *THE LARYNGOSCOPE*, March, 1901.

DR. W. K. SIMPSON said that he had been interested in the statement made in the paper about the number of cases in which adenoids had been present. He would like to know whether it had been noted that the removal of the adenoids had caused any reduction in the size of the growth as a matter of reflex influence.

DR. W. F. CHAPPELL said he believed the only way to treat recurring papilloma in children was by tracheotomy. For many years he had followed the usual custom of trying to remove these

growths through the mouth and by opening the larynx and scraping it, and with results which those present were familiar with. A few years ago he had done tracheotomy in a case having nine papillomata of the larynx. Nothing else had been done, yet they had entirely disappeared. Since then he had had three similar cases with an equally good result.

DR. MAYER said that somewhere in the confines of Georgia was a laryngologist who should put all the rest of us to blush, as he had reported six cases, some even occurring in young and rebellious children, and yet he had been able to see the papillomata at the first examination and remove them at once with a snare. Certainly this gentleman deserved to be congratulated. Dr. Louis Fischer claimed to have had good results from medication applied to the outside of an intubation tube.

DR. N. H. WILSON said he also wished to emphasize the value of the rest cure in these cases. In one exceedingly troublesome case of recurrent papilloma there had been no improvement until he had desisted from local treatment.

DR. QUINLAN said that when a tube was inserted the parts above were placed in an unnatural state of rest. It seemed to him that the larynx should open and shut as in the natural state; hence he thought that the treatment should be first directed towards removing faulty conditions above, viz.: in the nose or rhino-pharynx. The paper was a greater plea for a more thorough exploration and medication of the upper-air tract.

INTERNATIONAL MEDICAL CONGRESS.

SECTION OF LARYNGOLOGY AND RHINOLOGY.

Summary of Proceedings—Sessions of August 7, 1900.

(Proceedings continued from page 80.)

Pathologic Anatomy and Diagnosis of Singer's Nodules—O. CHIARI (Vienna).

Various laryngeal lesions are described under the name of singer's (or vocal) nodules. In this paper only the following are studied: These nodules are round or slightly elongated, and lie upon the free border of the vocal bands, more frequently at the junction of the anterior with the middle third. They are always symmetrical. In color they are yellowish white or reddish white. Ordinarily they have a glistening surface and are sessile and opaque. In size they may become as large as a pin head. Special characteristics distinguish them from fibromata, cysts, papillomata and other neoplasms, likewise from tubercular or syphilitic nodules. They never ulcerate and seldom disappear spontaneously.

Authors have different opinions as to their frequency. Chiari has observed them in one-half to one per cent of all laryngeal cases, and about double as often in the female as the male. Perhaps this is due to the fact that the former pay more attention to the voice than the latter. Above all, these nodes are to be observed among singers, although they are not uncommon in children.

The following are causes: Acute and chronic catarrh of the larynx, overstrain of the voice, and perhaps defective method of singing. Most writers consider these nodules a form of hyperplasia of the epithelium and of the superficial fibres of the vocal band. This opinion is confirmed by histologic observations, which are considered in the report. Finally, Chiari gives his personal observations resulting from his investigations, and comes to the conclusion that the mucous glands only very exceptionally take part in the formation of these nodules.

Concerning Singer's Nodules—H. KRAUSE (Berlin).

Singer's nodules are small round bodies, ranging in size from a pin point to a millet seed, located on the edge of the vocal bands. They usually result from a misuse of the cord in singing, not in talking. Anatomically they are small fibrous bodies with a pachy-

dermal covering, containing fluid. They cause compression and atrophy of the elastic tissues.

The disturbances caused by the nodules manifest themselves in a difficulty of producing certain notes. This necessitates great exertion on the part of the patient, in attempting to supply those notes. Not only do the tones suffer greatly, but this high tension of the local bands results in the condition becoming gradually worse.

The treatment consists chiefly in rest. This will sometimes cause the nodules to disappear. Should this fail, the removal of the growth is justified in an attempt to restore the voice. J. S. M.

Treatment of Singer's Nodules—CAPART (Brussels).

The treatment of singer's nodules should be hygienic, medicinal and operative. Many writers report cures possible only after prolonged non-use of the voice, although it is rather bold to rely upon this alone. Rest of the organ will naturally have a real and beneficial influence upon the laryngitis which forms the basis of the nodules, but I have never seen it exercise the slightest influence upon the nodules themselves.

I include under the head of medicinal treatment, insufflation and spraying, astringent or antiseptic, applications of solutions of nitrate of silver, and above all cauterization with pure or mitigated nitrate of silver or chromic acid, which is applied with a series of ingenious instruments devised for this purpose. All these means are inefficient if not harmful. The active material diffuses itself beyond the desired limits and may cause an acute inflammation whose duration and extent cannot be foreseen.

The operative treatment, therefore, is the most satisfactory, and no distinction in this regard should be made, whether one prefers the simple ablation or galvano-caustic destruction. As a general rule it is not wise to use instruments which act like a punch on account of the risk of cutting off what is not desirable to remove, and injuring subjacent tissues and thereby compromising the singing voice. Preference should therefore be given to very fine and delicate forceps, like those of Schmidt or Jurasz, or those which I have recommended for years and which act from before backwards as well as laterally.

We need not fear to remove the nodule in its entirety at its base. When we consider the brilliant success of Professor Labus, who recommends flaying (*scorticamento*) of the cord, there is no reason to fear that we may pass beyond the limit of the disease.

The galvano-caustic treatment should be reserved for those cases where the growth is so small that it cannot be seized between the blades of the forceps or to equalize the edges of the cord after an insufficient extraction. Recurrences are possible. The best means of preventing this is to insist on vigorous hygiene. After the operation absolute silence should be enjoined for some time and singing should be avoided for at least a month. An absolute change of method, register or teacher may be necessary. Finally, it is wise to spend a time at Ems, Mont-Dore or Luchon.

Laryngeal Nodules; a Therapeutic and Anatomo-Pathological Study—J. GAREL and M. BERNOUD.

This paper is based upon a study of 144 cases of laryngeal nodules. The nodule is a special trouble which is not found in singers alone. It consists of a small sessile tumor, most often bilateral and located at the juncture of the anterior third and of the middle third of the vocal cord. Laryngeal nodules occur much more often in women than in men, and are very frequent in children. They may follow a subacute or chronic laryngitis. They are frequently caused by excessive vocal exercise or a bad method in teaching singing.

Cure of the nodules may be spontaneous in recent cases. It is hastened by sulphurous medication. In chronic cases surgical treatment is absolutely necessary. Destruction by chemical caustics cannot be limited with precision. Garel has often used the galvano-cautery with success, but at present he much prefers forceps, which permits of the removal of the nodules with mathematical precision.

Microscopic sections were presented to demonstrate the varying nature of these nodules. Fränkel's opinion that there is always a glandular neoplasm or alteration is entirely incorrect.

Laryngeal Arthritis—ESCAT (Toulouse).

Outside of laryngo-typhus and tertiary syphilis of the larynx but little importance has been attached to articular diseases of the larynx up to the present time. The reason that acute arthritis and ankylosis of the laryngeal articulations have attracted so little attention is that they have been constantly mistaken for laryngeal paralysis: crico-arytenoid arthritis for paralysis of the recurrent, and crico-thyroid arthritis for paralysis of the external laryngeal. The clinical similarity is enhanced by the laryngoscopic picture.

Crico-arytenoid arthritis (acute) is differentiated from recurring paralysis by the following signs: 1. Dysphagia. 2. Painful

cough. 3. Variable tumefaction of the arytenoid elevations. 4. Sharp pain on pressure behind the posterior edge of the rings of the thyroid cartilage. 6. No riding of the healthy arytenoid on the diseased one. 7. Frequent although unequal bilateral arthritis.

Crico-thyroid arthritis (acute) is differentiated by the following signs: 1. Painful vocal effort even when the voice is raised. 2. Persistence of the contractions of the crico-thyroid muscle during such effort. 3. Pain in the crico-thyroid articulation on pressure.

Ankylosis of these two articulations are still more difficult to recognize. Whilst the arthritis is stubborn to electrotherapy it yields readily to revulsives. The ankylosis requires dilatation, intubation and massage and is more difficult to treat.

Treatment of Deflections of the Septum—E. J. MOURE (Bordeaux).

Up to the present the method of Asch, of making a cross-shaped section, seems to have given the best results. The author not having found this satisfactory in all cases employed a method which differs radically from this.

When there is a spur or a thickening of the fibro-cartilage at the deflection he begins by suppressing the cartilaginous point and smoothing the septum as much as possible, in such a manner as to leave nothing but the deviation of the septum. As soon as the mucous membrane is found again on the surface, about a month later, the following operation is made: After having cocaineized the two surfaces of the septum an incision parallel to the floor of the nasal fossæ is made. This is about two centimeters long. A second incision is made along the vestibule. A triangular flap is thus obtained which is easily movable. Then introducing a special dilating tube, formed of two blades which are parallel, the external of which is fixed and rigid and the internal much larger, of malleable metal, the septum is flattened by forceps and hoe. The dilator is permitted to remain in place seven to eight days so as to obtain perfect healing of the cut parts. During the first forty-eight hours, when a more or less intense inflammatory condition arises, the nose is bathed in boiled boric water. A few applications of the spray suffice to prevent the accumulation of crusts which tend to form in the interior of the nasal fossæ. The employment of this method for two years past, in adults, has always given excellent results.

In children it is more difficult to use this method, and, besides, it is hardly proper to practice these operations before the nose is fully developed.

Pseudo-Hemoptysis of Naso-Pharyngeal Origin — RICARDO BOTEY (Barcelona).

The author has seen twenty cases of this sort in ten years and literature contains little or nothing on the subject. In almost every case where a patient expectorates blood, the chest symptoms being negative, the cause of this false hemoptysis is located in the naso-pharyngeal cavity. The author mentions six cases in each one of which there was little or no coughing, the patient noticing blood in his sputum. If one of these hemorrhages be examined blood is seen to ooze behind the velum palati, along the posterior wall of the pharynx. If a cotton-covered probe is carried to the vault of the pharynx hemorrhage is frequently excited; in any case the cotton is much stained with blood.

In studying the pathology the author finds the mucosa eroded, and, where crusts form, desiccation of these takes place, they drop off, leaving the openings of the capillaries exposed as before. Finally, the author has frequently observed in similar cases small black crusts attached to the tonsil of Luschka and more often to the vault of the pharynx. When these crusts are touched with a probe the hemorrhage is produced, thus showing the naso-pharyngeal origin of this pseudo-hemoptysis.

Treatment of Chronic Pharyngitis—CAMILLE SAVOIRE (Paris).

The difficulty experienced by those who have devoted their attention to the treatment of chronic pharyngitis, arises from the fact that swabbing, spraying solutions, medicated powders, chemical or physical cauterizations cannot reach the folds of the diseased mucosa. The author describes a manner of treating which consists in the use of antiseptics easily volatilized, which afforded a large number of cures in his private practice during the past three years. After having treated the nasal lesions of a mechanical nature (which are the most frequent cause of pharyngitis) by appropriate medical or surgical treatment, re-establishing to the greatest degree possible nasal permeability, he begins the following treatment:

1. Lavage of the naso-pharynx by means of one of our two douches—anterior nasal or posterior nasal, according to the tolerance of patients—to remove, morning and evening, the mucus which accumulates in the naso-pharyngeal cavity, with $\frac{1}{2}$ litre of a 1 per cent solution of phenosalyl.

2. The lavage is followed by a nasal inhalation lasting four to five minutes with a teaspoonful of the following solution:

Formol 0.05, Menthol 10.00, Gomenol 10.00, Chloroform 10.00, Eau de cologne 100.00.

3. Every evening we have the naso-pharynx touched with the two following solutions: (*a*) Saturated aqueous solution of resorcin (15 to 10). (*b*) Menthol 1.00, Tincture of iodine 5.00, Glycerine 10.00 This treatment, in nowise painful, generally brings about a cure of the most stubborn cases in a few weeks.

Hypertrophy of the Tonsils and Adenoids—H. CUVILLIÉR (Paris).

The author treated 2,785 children, of which 1,171 were female and 1,614 male. He found 569 simple hypertrophy of the tonsils, 106 simple adenoids, 1,156 hypertrophy of the tonsils and adenoids coexisting. In hypertrophy of the tonsils the mean age was five to seven years, but adenoids occurred even in sucklings.

In hypertrophy of the tonsils there are two types, and in adenoids three. In 2,019 cases of adenoids the respiratory type alone occurred 1,214 times; the auricular alone 75 times, and the mixed form 730 times. A radical operation is advised to prevent relapses.

On Vowels and Consonants—GELLÉ (Paris).

The author demonstrated by means of the phonographic tracings which he presented not only the differences in the various vowels and consonants, but also the individual differences due to the different manner of speech in various subjects. By means of these phonographic tracings the author has also been enabled to demonstrate faults in pronunciation, certain faults in speech. Thus in a stutterer he found between the sounds A and I the sign of E, which by the slowness of the elevation of the tongue is very distinctly formed.

Tonsillitis Streptothricia—P. HELLAT (St. Petersburg).

This name has been given to a disease very often observed by the author. He examined about ninety cases of this disease and found the tonsils covered with several kinds of streptothrix. Inoculations on animals and cultures did not succeed. As clinical symptoms of this disease, may be mentioned periodical pains, paresthesia, catarrh of the pharynx and contiguous organs, sensitiveness to pressure and slight swelling of the tonsils, as well as vocal disturbances.

The treatment consists in incising the tonsils and eliminating the streptothrix. The prognosis is good.

Hysterical Paralysis of the Left Vocal Cord, with Concomitant Paresis of the Sterno-Mastoid and Trapezius of the same Side, Anesthesia and Paresis of the Velum Palati, Disturbances of Deglutition and Hypersecretion—C. CHAUVEAU.

A woman, aged fifty-three, having had at eighteen a neuropathic paraplegia; some other signs of hysteria, notably small areas of analgesia. Following an irregular deglutition, she was suddenly seized by the following: Hoarse voice, disagreeable and very weak; very marked paresis of the left sterno-mastoid and of trapezius; nasal speech and regurgitation of food by the nose; abundant hypersecretion of viscous mucus. Anesthesia of the palate. On laryngoscopic examination, the left vocal cord immobile in abduction. Rapid disappearance of the trouble in a few days.

The paresis of the sterno-mastoid, of the trapezius and of the velum, coinciding with the paralysis of the vocal cord, seems to be one more clinical fact in favor of the phonatory role of the spinal cord.

A Case of Symptomatic Leucocythemia of a Tonsillar Lymphosarcoma, with Invasion of the Four Tonsils and Generalization to the Ganglia—C. CHAUVEAU.

C. R——, sixty-eight years. The faucial tonsils began to enlarge in March, 1899. Three months later invasion of the cervical ganglia. Slight dysphagia; preservation of general health. In January, 1900, enormous tumefaction of the two faucial tonsils; considerable hypertrophy of the lingual tonsil and less so of the pharyngeal. Enormous enlargement of the cervical ganglia. The ganglia of the axilla and groin are beginning to enlarge. No leucocythemia. General health continues good. Six months later, considerable reduction of faucial tonsils and cervical glands, but the lingual tonsil remains large. The pharyngeal tonsil has enlarged very little. Well-marked leucocythemia: 1 leucocyte to 30 red corpuscles. At a new examination, lymphosarcoma.

This case is interesting on account of the invasion of the four tonsils, the late leucocythemia in a case of lymphosarcoma, the persistence of health and the marked diminution of volume in faucial tonsils and cervical glands coming on so late.

New Tonsillotome—G. AJUTOLE (Bologna).

The author presented a very simple instrument to remove the faucial tonsils, a pair of scissors elbowed below the joint and have the cutting edges toothed. One of the blades is a little larger

than the other, and at its extremity almost makes a right angle. On the flat side there are teeth to engage the parts that are concerned. This instrument may also serve as a uvulotome.

The Importance of the Superior Pillar of the Tonsil and of the Supra-Tonsillar Fossa as a Cause of Phlegmonous Peri-Amygdalitis, Complete Extirpation of the Upper Half of that Organ as the only Efficacious Preventive Treatment—RICARDO BOTEY (Barcelona).

Some patients have phlegmonous peri-amygdalitis two or three times yearly and the treatment of the removal of the tonsils, tearing, or ignipuncture, without enucleation, in the majority of cases does not prevent relapses. The danger lies in the superior pillar of the tonsil. Incision is rarely sufficient and the method may succeed, but the radical enucleation of the upper portion of the gland is the only proper method. There are cases in which the extirpation of the upper third is impossible so close are the adhesions. The author in such cases uses a cutting hook, cutting from without inwards and shaving a part of the soft palate. Other operations are detailed, but in all of them the hemorrhage is very moderate, and when properly performed peri-amygdalitis is never again seen.

Contribution to the Treatment of Hypertrophic Tonsillitis by Tearing—RUAAULT.

The author recalls the fact that the principle of his method of removal of the tonsils by means of his cutting forceps consists in first crushing the tissues and not cutting until after the crushing. His forceps are not cutting. Instrument makers sell to-day under his name forceps which cut and do not crush; this is a mistake which he desires to absolutely repudiate. Besides, in certain cases, the simple crushing of a pedunculated tonsil between the jaws of an ordinary flat forceps is sufficient to cause the disappearance of the gland by compression.

INTERNATIONAL MEDICAL CONGRESS.

SECTION OF OTOTOLOGY.

Summary of Proceedings—Session of August 8, 1900.

(Proceedings continued from page 82.)

Right Purulent Otitis Media, Polypus; Cerebral Abscess and Left Hemiplegia. Trepanation of the Mastoid, Temporal Hemicranisation, Antrectomy; Cure—COSTINUI (Bucharest).

A patient of thirty-six, whom the author saw, suffering for twelve months from an otorrhea, with fetid pus and polypus in the meatus, was suddenly seized with a flaccid left hemiplegia accompanied by right ptosis. At the same time he complained of violent pains in the temporo-frontal region, temperature 38.4°C , no vomiting, vertigo or torticollis. The diagnosis made was cerebral abscess; an opening into the apophysis brought nothing; on the contrary, an aspirating puncture at the lower part of the temporal lobe allowed the escape of fetid pus. The wound was closed after having been drained. A half hour later the left side could be moved, and the temperature fell to 37°C .

From the fact that the patient took a long time to improve, that he had at several times had loss of consciousness, surgical measures were again used; a large quantity of fungosities was found on the meninges and curetted; the wound was drained. Following this operation the patient improved; to-day he is cured.

In the pus were found only anerobic bacteria, which may be proteus vulgaris and coli communis.

Note on a Method of Curetting the Attic and of Removing the Ossicles—M. VACHER (Orleans).

The author employs a method which permits him to reach the attic without detaching the auricle and which has always given him good results.

The upper half of the membranous canal is detached and brought outward by means of two horizontal incisions, the one posterior and the other anterior, beginning at the bottom of the canal. They involve the whole thickness of the tissues from the tympanum to the auricle. This being done, the upper half of the canal is detached with a small, blunt spatula, taking care to spare

it. This detached upper half is pulled forward by means of rat-toothed forceps; then with a bone scraper the shred and the periosteum are removed above and without; thus more than half of the bony part of the entrance of the canal is exposed to view. So that, in this manner, the ossicles may be removed and the attic curetted, after having forced the wall with the hollow gouge. The entire upper wall of the canal may be removed and also the upper quarter of its outside wall. Thus there is obtained a large cavity. The operation being concluded, the canal is put back in place, it being held firmly agglutinated by a narrow band of gauze to the upper external wall to avoid atresia. If the separated portion of the canal is too much broken down it might be resected.

This procedure is easier, more rapid than that of the detachment of the auricle.

Indications for the Operative Treatment of Chronic Purulent Otitis Media—HEIMANN (Warsaw).

There undoubtedly exists a class of otites which heal spontaneously or give way to medical treatment. But the majority are rebellious. Nevertheless, there always exists an indication to begin with a conservative medical treatment, unless there are plain indications for more active interference. When medical treatment, including even small interventions by the canal, fails, then only is one justified in operating through the mastoid.

The indications for the opening of the mastoid apophysis were discussed at length at the last International Congress held in London, but these discussions did not tend to any very positive conclusions.

It is beyond all doubt that when endo-cranial complications or general infection threaten, and with more reason when they have been produced, there can be no hesitation, and operative measures are absolutely necessary. They are equally so in cholesteatoma, in necrosis of the temporal, in the case of bony fistulas, of abscess and in tuberculosis of the temporal, if the state of the patient permits of it.

But, in otorrhea, in which these complications do not exist, an operation is relatively indicated. And there is no necessity to hurry matters because some patients may still be benefited by medical treatment; besides it is difficult to point out the delay beyond which, if it has not succeeded, it is useless to continue it. Finally, intervention must not be made if the otorrhea is especially due to a morbid process in the tympanic mucosa.

Peritympanic Fistulas and the Spontaneous Petro-Mastoid Emptying in Suppurating Otitis Media—M. RAOULT (Nancy).

Since the works of Luc, Lubet-Barbon, Broen, of Lombard, Mignon and Weissmann, it is known that suppurations of the apophysis may open in the bony canal. This suppuration may show itself in the canal without there being perforation of the tympanum; in fact, it often occurs that the tympanic lesion, after having spread to the antrum and to the cells, recedes, and the latter continue to suppurate through fistulas of the posterior wall of the canal.

There are two types of fistulæ: the postero-inferior, due to the opening of the inferior limitrophic mastoid cells, diseased at times without implication of the antrum; the postero-superior, due to necrosis of the lower wall of the antrum.

They are located against the tympanum and bounded, in chronic cases, by a membranous wall.

The author cites a case in which this lesion was bilateral.

In another case, the loss of substance was constituted by a large cavity encroaching upon the posterior part of the tympanum in all its height, separated from it by the bony frame, which seemed intact.

From these facts, the author reports two personal cases in which there was complete reunion of the attic, of the antrum and probably of the limitrophic cells, and he establishes an analogy between these different stages of bony destruction of the walls of cavities in course of suppuration in chronic otitis.

These losses of substance may heal spontaneously, but most frequently they require to be treated energetically.

Special Demonstrations.

The members of the Section of Otology, at the close of this session, went to the Ecole de Médecine, where Prof. Politzer and M. Panzer, of Vienna, exhibited a series of pictures of sections of the ear.

Demonstration of Prof. Politzer:

1. A preparation showing sections through the tympanic cavity.
2. A preparation showing the location of the external attic and Prussak's space.
3. Pathological sections showing the presence of the exudation in the external attic and the adhesions between Shrapnell's membrane and the neck of the malleus.

4. A section through the tympanum in a case of inflammation of the tympanic cavity.

5. Polypoid growths in the tympanum, due to chronic suppuration, in children, after scarlatina.

6. Preparations showing adhesions between the tympanic membrane and the internal wall of the cavity, after chronic suppurations of the middle ear.

7. A series of very interesting preparations representing the anatomical foundation of the disease known as *otosclerosis*, consisting of a proliferation of newly-formed bone in the labyrinthine capsule, which brings on ankylosis of the stapes.

8. Pathological changes in the labyrinth, e. g.: Proliferation of connective tissue as a result of internal otitis, ossification of the cochlea, exudation produced by the compression of the blood vessels of the external auditory meatus by a neoplasm of the cranial cavity.

Causes and Treatment of Ménière's Disease—URBAN PRITCHARD (London).

It is necessary before anything else to distinguish between the sign of Ménière and the disease properly called Ménière's.

The former may be produced either directly, or indirectly, or by reflex irritation of the posterior labyrinth, irrigation in the canal, pressure by a plug or foreign body, extension of the inflammation of the middle ear, change in pressure in chronic catarrh, or an intra-cranial lesion.

So far as Ménière's disease, to speak more properly, is concerned, we must first distinguish the apoplectic form, in which a severe attack immediately and completely destroys the functions of the ear affected by hemorrhages or an important congestion. The cause of this may be a traumatism, alteration of the blood (leucocythemia) or unknown.

On the other hand, the epileptic form is that which manifests itself by these periodic attacks. The causes of this are, for the most part, unknown; gout, a sunstroke and catarrh of the middle ear may be responsible for it.

Treatment—That of the sign of Ménière consists in treating the cause, which is often recognized; the plug or the foreign body is removed; the extension of the inflammation of the middle ear is treated with blisters, leeches, etc. In the case of intra-cranial

lesions, the sign is of secondary importance, the gravity of the causative lesion is of prime importance; nevertheless, bromides and hydrobromic acid may be used as palliatives.

Apoplectic Form.—Rest in bed, revulsion. bromides, pilocarpine. Really, very little to do.

Epileptic Form.—Therapeusis is more efficacious; bromides and salicylate of soda, small doses of quinine, of iron, and strychnine. Blisters used from time to time improve the hearing and lessen the tinnitus. Pilocarpine is rarely to be advised.

BALLANCE has, in a recent case, bared the vestibule and covered it with a skin graft; hearing returned and vertigo disappeared. We have in this, perhaps, a method of treatment to employ in the future.

MOLL, of Arnheim, co-reports on the same. Ménière's disease, or the complexus of signs called the symptoms of Ménière, consists, as is well known, in vertigos connected with tinnitus, and deafness and nausea or vomiting. Vertigo, which predominates in this triad, *vertigo ab aure læsa*, *vertigo auralis*, has for its origin a fleeting or permanent affection of the labyrinth either primary (hemorrhage, syphilis, etc.) or secondary (increase of intra-labyrinthine tension). But there are vertigos which may have created confusion; they have as points of origin organs more or less remote from the ear; *vertigo a stomacho læso*, those produced by a discharge in the nose or naso-pharynx, and those which give rise to cerebral or cerebellar affections, etc.

Now, it is not in conformity with observation to adopt the apoplectic form as typical, to identify apoplexy of the semicircular canals with Ménière's disease, for several reasons: In the first place, because anatomo-pathological observations are insufficient; in the second place, because the etiology is often different, and there is too great a difference in the appearance of the apoplectic and that of other forms. As a result, Moll, together with Brunner and Frankl-Hochwart, propose a change in the name Ménière's disease to that of Ménière's symptom, in all cases, with the restriction of making a classification and taking for the basis of division the seat of the disease.

The treatment of the symptoms of Ménière is that of the different aural affections in which the ampullar nerves excited either by a material lesion of the labyrinth, or by secondary compression, or by reflex action.

In cases of material lesion of the labyrinth during the crisis, rest and antiphlogistics are indicated, as well as suppression of the emotions and of all excitement; loud noises must be avoided, a strict, dry diet followed and total abstention from alcohol. Sulphate of quinine may be used with profit in small doses to quiet the labyrinthine hyperesthesia, and also injections of pilocarpine; ergot is unreliable. The iodides hasten absorption and act especially on syphilis, if that be the cause.

In other cases, local treatment is the better one to follow; free the labyrinth of all compression, either by removing a plug, or by an air douche, or by myringotomy, etc.

If it be reflex vertigo, the nose, the throat, or the naso-pharynx should be treated, and finally remove spurs and hypertrophied turbinates, if their presence, causing from time to time vertigo, give rise to a group of signs which simulate Ménière's disease. Electricity has never yielded any results to M. Moll. This author, following the example of Politzer, would feel inclined to galvanize the great sympathetic in cases of the angio-neurotic form of Brenner.

UNVEILING OF THE MONUMENT TO THE MEMORY OF PROF. CHAS. DELSTANCHE, OF BRUSSELS.

The installation and unveiling of the monument erected to the memory of Prof. Chas. Delstanche, of Brussels, took place January 20, 1901, in the Hospital of St. Jean, of Brussels. This is a well-deserved testimonial to one of the ablest champions in otology and the founder of the first otological clinic in the hospitals of Belgium.

At the Thirteenth International Otological Congress, in the fall of 1899, Dr. Delstanche was awarded the Lenval prize as a token of recognition for his faithful and original work in his chosen field.

It is but a just tribute to the memory of this distinguished otologist that this monument has been erected to serve as a landmark in the place where his many active efforts bore their richest fruit.

SELECTED ABSTRACTS.

Edited by

FAYETTE C. EWING, M.D., St. Louis,

with the collaboration of the

EDITORIAL STAFF.

I. NOSE AND NASO-PHARYNX.

The Importance of Preliminary Treatment for Intra-Nasal Operations—CARL SEILER—*Med. Record*, October 27, 1900.

As in general surgery it is always the rule to prepare the general condition of the patient before any surgical procedure is undertaken, so in nasal surgery it is very necessary to reduce the catarrhal state of the mucous membrane before any radical measures should be attempted.

Diet and hygienic measures should be prescribed; bathing of the neck and chest with cold spongings.

The nose and naso-pharynx should be cleansed with a mild alkaline spray of proper density and temperature. The author mentions his well-known tablet, and states that frequently it is not prepared in a proper manner.

Applications of an iodine glycerine solution are recommended to reduce the turgescency of the turbinals—operations following such preliminary medication afford better results.

(The abstractor called attention to the beneficial effects of such treatment a number of years ago, and still places considerable confidence in the method advocated.)

M. D. LEDERMAN.

Immediate and Remote Effects of Nasal Obstruction—F. R. REYNOLDS—*The Med. Age*, January 25, 1900.

The author briefly refers to the physiologic functions of the nose.

The influence of a patent nostril upon good voice is mentioned, and the cause of many morbid conditions, like spasmodic asthma, cough, vertigo, neuralgia, gastric and cardiac symptoms is attributed in some cases to nasal irritation. Secondary effects as the result of nasal obstruction are often seen in the accompanying pharyngitis, bronchitis, emphysema, disease of the ears and eyes.

STEIN.

Nasal Obstruction and its Influence—J. LAWTON HIERS, Savannah, Ga.—*Ga. Journ. of Med. and Surg.*, February, 1900.

A clinical report of five cases. A case each of tinnitus, asthma, bronchitis and suppurative otitis media were relieved by reestablishing free nasal respiration.

W. SCHEPPEGRELL.

Removal of a Dislocated Columnar Cartilage—F. Y. CHAMBERLAIN—*Va. Med. Semi-Monthly*, March 9, 1900.

The protuberance was removed, and the parts kept in position by means of cardboard splints. W. SCHEPPEGRELL.

An Unusual Case of Nose-Bleed—C. W. SQUIRES—*Med. Record*, December 22, 1900.

This symptom was observed in a male, fifty years of age, and was quite alarming. For two months nose-bleeds occurred, which were only controlled by tampons and internal medication.

The patient felt something sharp in his right nostril, and his wife saw something sticking out of the skin on that side. On removing the foreign body, it proved to be a needle, broken off near the eye. No cause for its presence could be given.

M. D. LEDERMAN.

Intranasal Angioma; Bleeding Polypus of the Septum—W. E.

CASSELBERRY—*Journ. Am. Med. Assn.*, February 3, 1900.

Casselberry believes that intranasal angioma are not as rare as has been represented. He reports a case in which he removed an angioma from the septum by means of the cautery snare. The base was cauterized with chromic acid. Two years have elapsed and there has been no recurrence. ANDREWS.

Nasal Reflex Neuroses in a Patient of Neurotic Type—H. N.

HOOPLE—*Brooklyn Med. Journ.*, Oct. 1900.

The reflexes must in evidence exert:

1. The balance of the external ocular muscles with possible disturbance of the ciliary muscles in accommodation.
2. Nausea, mornings and after eating.
3. Quickened respiration and tochycardia.
4. Cough.
5. Throbbing pain at the right side of the nose; together with other naso-motor disturbance.

disease was found in the right side of the nose (pressure of inferior and middle turbinals). Also some error of refraction and some affection of the teeth and antrum. M. D. LEDERMAN.

The Removal of Thirty-Five Screw-Worms from the Nose—

HAL. FOSTER—*N. Y. Med. Record*, December 22, 1900.

These foreign bodies were found in a male patient, seventy-two years of age, whose nose, eyes and face were badly swollen. He complained of excruciating frontal headache, and the discharge from the nose was bloody and very offensive.

On examining the nose the worms could be easily seen. They had made quite a large opening in the hard palate. Application of chloroform directly to the worms, on cotton, soon dislodged and brought them away. The sinuses were not involved. The patient made a rapid recovery. M. D. LEDERMAN.

II. MOUTH AND PHARYNX.

Mycosis of the Throat, with Report of a Case—F. E. WAXHAM— *Colorado Med. Journ.*, December, 1900.

The interest of this disease lies in its rarity, its resistance to all ordinary methods of treatment and the necessity for correct diagnosis. The disease is a parasitic one, due to the *leptothrix buccalis*, the spores of which are long and threadlike. It has been considered synonymous with thrush, but the two diseases are very different. The parasite gives rise to a fungus growth that appears in the form of small milk-white or yellowish-white tufts, soft and moist. These tufts are usually situated in the crypts, or in a wedge-shaped manner, in the mucous membrane just about the orifices of these crypts, and project about one-sixteenth to one-eighth of an inch above the surface of the mucous membrane. Occasionally they are hard and horn-like.

Mycosis may be found upon the posterior wall of the pharynx, the tonsils or upon the base of the tongue.

The disease is met with in the healthy quite as often as among the feeble and sickly, and quite as frequently among those whose teeth are well cared for as among those with carious teeth.

It is easily distinguished from tonsillitis, for in the latter disease the white spots of exudation are entirely confined to the tonsillar follicles, not appearing upon the mucous membrane elsewhere, and is smooth, not in tufts. In diphtheria we have the continuous patch of exudation, and not small, isolated white tufts. The microscope also differentiates. Probably the cheesy matter in the tonsil follicles most resembles the disease.

Once established there is no spontaneous cure, and the disease may last for years, or a lifetime, resisting all ordinary medication. The strongest antiseptics have little or no effect. This is because the roots of the fungus are deeply imbedded. It may be cured by the careful use of chromic or muriatic acid, but by far the best treatment is by the galvano-cautery, each mycotic tuft being deeply cauterized by the needle.

EATON.

Grant's Cheiloplastic Operation for Restoration of the Lip—

J. S. WOOTEN (Austin)—*Texas Med. News*, Mar. 1900.

The cheiloplastic operation for restoring the symmetry of the mouth, according to the method suggested by Grant, of Denver, Col., has proved successful in the case reported by the author.

The objections raised by Grant, and others, against the old-established, V-shaped operation, are as follows:

(1) Applicable only to small growths and large mouths; (2) needless sacrifice of tissue; (3) greatest tension is thrown at the vermilion border—the base of the wedge, and hence the puckering and deformity are greater; (4) the flaps are not taken from the mobile portions of the cheek at all; (5) extirpation of the sub-maxillary lymph glands are rendered difficult by necessitating additional separate incisions.

The advantages of Grant's operation are as follows:

(1) The incisions are confined to the mobile, elastic portions of the lip and cheek, allowing dissections where necessary from the alveoli; the large, well-nourished triangular flaps can be slid over the chin and make traction on the whole cheek and none on the chin; (2) there is less tension of the lip; it is more prominent and natural in consequence, therefore it is more flexible in use; (3) there is less necessity for resorting to accessory operations to restore size and shape of mouth, which is less apt to be disfigured by this operation than any other; (4) the removal of all submaxillary gland tissue can be easily accomplished by the continuation of the same oblique incisions over the rami of the jaw.

W. SCHEPPEGRELL.

Peritonsillar Abscess in Children, with Report of Case—L. T.

ROYSTER—*Pediatrics*, September, 1900.

The patient, twenty months old, developed a nasal diphtheria, from which it recovered, only to be followed by a peritonsillar abscess ten days later, which drained both externally at the angle of the jaw and in the mouth.

STEIN.

Aneurism of the Internal Carotid Consecutive to Abscess of the

Tonsil—WOLF—*Rev. Hebd, de Laryng., etc. The Med. Bulletin*, September, 1900.

This peculiar sequela occurred in a female child, eight years of age. The attending physician while cleansing a swelling in the left tonsillar region, the size of a walnut, previous to making an incision into the supposed abscess, noticed as the child made a reflex movement of the throat, that a very large jet of blood was ejected from the mouth. Nearly a pint of blood was lost, but the bleeding stopped of its own accord, and the pharyngeal swelling disappeared though the patient was much debilitated. Two weeks later the tonsil again became enlarged, and an incision gave exit to pus. The patient seemed cured. A month later the physician noticed for the first time a tumor upon the posterior wall of the pharynx, progressively increasing in size. Repeated punctures always yielded pure blood of a clear, red color.

When the author saw the case, the patient was extremely anemic. The left tonsil, though not hypertrophied, projected very much, the posterior pillar was effaced and a spherical tumor almost touching the velum palati could be seen pulsating. When the carotid artery in the neck was compressed the pulsation in the tumor ceased. An exploratory puncture showed arterial blood.

Fearing a rupture of the aneurism on account of the thinness of the tumor covering ligation of the internal carotid was performed with good result. The author believes that at first there was an abscess of the tonsil, producing an erosion of a great vessel, followed by a rupture of the wall of the vessel, accompanied by the bleeding, and the development of the aneurism at that point.

M. D. LEDERMAN.

III. ACCESSORY SINUSES.

Acute Sphenoidal Sinusitis Terminating in Fatal Suppurative Meningitis and Diagnosticated only at the Autopsy—J. Toubert—

Medical Bulletin, October, 1900.

The author reports a rather unique case, with the following interesting features: Patient, male, twenty-two years old, soldier, was admitted to the hospital, with an attack of grippal bronchitis. The disease resolved into two distinct phases, a medical and surgical. The medical phase the bronchitis became complicated by an angina and finally both disappeared. Then the surgical phase appeared, showing itself in an attack of acute otitis. After a seemingly complete recovery, there was a relapse of the otitis. After the cessation of the second attack of otitis a new phase appeared, the predominate symptom being an intense, diffuse headache. Chills were also present and temperature reached 104.5°F. There was no reaction in the mastoid or carotido-jugular region; no disease of the thoracic or abdominal organs could be made out. The pupil and fundus of eye were normal. Some vomiting occurred. About two months after the initial attack of otitis patient died. The autopsy revealed the following salient points: 1. Diffuse meningitis at base of brain, limited to the soft membranes, lesions being particularly developed on the roof of the sphenoidal sinus; 2. a suppurative bilateral sphenoidal sinusitis with destruction of the intersinusal septum; 3. a unilateral suppurative otitis media without osteitis of the mastoid; 4. absence of lesions of phlebitis in sinuses.

Remarks—Case illustrates remote effects of grippal complications. Rhinoscopic examination, anterior and posterior, revealed no information. Osteitis of the sphenoid is almost the rule in sinusitis complicated by meningitis. The only three possible roads of transmission from the sinus to the subarachnoidal space, are osseous, venous and lymphatic. In this case the osteitis evidently existed. The salient feature brought out in this case is that sphenoidal sinusitis may not reveal itself by any characteristic sign. "Sphenoidal sinusitis is not rare, only the diagnosis is rare." (Lermoyes.)

E. D. LEDERMAN.

Radiographical Researches on the Topographical Relations of the Brain, the Frontal and Maxillary Sinuses, and the Venous Sinuses of the Dura Mater to the Walls of the Skull—

PAUL REGNIER and JULES GLOVER—*Lancet*, February 24, 1900.

Reproductions of three of the radiographs will be found in the *Journal des Practiciens* of September 4, 1897, and also in *La Radiographie*. The investigations led to the following results:

1. Regarded in its surgical aspect the topography of the skull and brain may be studied by radiographic methods, allowance being made for the fact that the views obtained inevitably present some very slight distortions. By means of radiography it is possible to see the brain through the skull. More than that, an important guide-mark in the study of the topographical anatomy of the brain and skull is furnished by the circumstance that in the photographic plate it appears to be possible to superpose the outline of the cranial sutures on the outline of the fissures which separate the cerebral convolutions from one another. By these methods the relations between the cerebral convolutions and the walls of the skull, so interesting from the point of view of surgical intervention, can be studied with almost no preliminary preparation, which might have the effect of materially modifying the exact relations between the brain and the skull. Similarly on the radiograph of the cerebral convolutions, viewed through their bony covering, the outlines and the form of the lateral ventricle of the cerebral hemisphere are very exactly traced.

2. The immediate relations existing between the venous sinuses of the dura mater and the skull, and in particular those existing between the lateral sinus and the skull, may be defined both in the child and in the adult. Injections of the venous sinuses of the dura mater made with liquids which ultimately become solid, and which hold metallic substances in suspension, as well as some other devices to the same end, have enabled the authors to see these sinuses very clearly through the bony wall. The radiographs show the lateral sinus.

3. The authors have also been able to study, especially in dried preparations, the extremely variable extent and form of the cavities and bony cells of the mastoid process, as well as of the maxillary, frontal and sphenoidal sinuses, and of the ethmoidal cells.

4. It has been possible to recognize in the infant and in the adult the exact position with reference to the outside of the skull occupied by the petrous portion of the temporal bone and the three successive levels of the base of the skull. The authors have easily obtained, in specimens covered with their soft parts, the opaque triangular outline of the base of implantation of the petrous portion on the squamous portion of the temporal bone, as well as the outline of the three successive levels of the base in their exact relation to the external wall of the skull.

For details as to the methods of procedure the original paper must be consulted.

It is easy by mere examination with the fluorescent screen to verify the transparency and the condition as to emptiness of the frontal and maxillary sinuses, and perhaps even of the mastoid cells, with much more exactness than by making use of the ordinary electric light.

STCLAIR THOMSON.

IV. LARYNX AND TRACHEA.

Limitations of a Gargle—SAXTON T. POPE—*Occidental Med. Times*, March, 1900.

The author quotes Dunglison's old dictionary definition of a gargle: "A gargle is a liquid medicine, intended to be retained in the mouth for a certain time, and to be thrown in contact with the uvula, velum palati and tonsils," and holds that we have forgotten this definition, many persons being deceived. For if the act of gargling be gone through without a liquid, the posterior pillars are seen to be closely approximated, the soft palate is depressed, the uvula lies to one side, being displaced by the tongue, which, retracted and markedly convex, fills in the base of the angle made by the posterior pillars.

The author made experiments with patients from the throat clinic of the San Francisco City and County Hospital, who were made to gargle a mixture of methylene blue, mucilage and magnesia, which adheres to the mucous membrane and leaves evidence of its contact. In the majority of cases the buccal cavity was completely pigmented, as also the tongue, hard palate, anterior pillars and normal tonsils. The posterior wall of the pharynx was uncolored. Hence it was learned that the pharynx is untouched, that the gargle certainly does not go up into the vault of the pharynx nor down into the larynx. Therefore, when it is desirable to treat the buccal cavity and its contents, a gargle may be of use; when the pharynx or larynx are to be medicated, it is impracticable. EATON.

The Treatment of Laryngeal Tuberculosis—R. D. COHN (San Francisco)—*N. Y. Med. Record*, December 22, 1900.

The author divides the therapeutics of this disease into three stages. In the first stage, with exception for circumscribed infiltration or ulceration, the larynx is healthy. This is the only stage in which we can hope for a cure, and the treatment consists in curettage in case an infiltration is present, or cauterization with lactic acid if an ulcer exists. If the general condition, especially that of the lungs, be good, these procedures are imperative.

In the second stage, the larynx presents extensive infiltrations or ulcerations. Here the antiseptic treatment should be employed. The mildest method is by means of antiseptic inhalations. If the interior of the larynx can be readily seen, the application of a ten per cent solution of carbolic acid in glycerine is recommended. Also a ten to thirty per cent solution of menthol in olive oil is very beneficial.

The third stage admits only of symptomatic treatment. The relief of the distressing dysphagia by morphine internally, or local applications of cocaine solution. Impending suffocation demands tracheotomy. Internal medication must also be given.

M. D. LEDERMAN.

A Case of Paralysis of the Recurrent Laryngeal Nerve; Recovery—JOHN A. CULP—*N. Y. Med. Journ.*, Oct. 27, 1900.

This condition occurred suddenly in a male, thirty-six years of age, during the course of a conversation.

Laryngeal examination showed an acute laryngitis of moderate severity, with the left vocal cord in the cadaveric position. The right cord compensated for its lame fellow.

There was no anesthesia of the pharynx or larynx, but the patient's nervous system was much below par. He had suffered for fifteen years with diarrhea.

Rest, local application of a spray of menthol in benzoinol, with tincture of *nux vomica* internally, gradually increased to 35 drops, three times daily, together with application of electricity, resulted in a cure in six months.

The diarrhea stopped after taking the *nux vomica*.

M. D. LEDERMAN.

Case of Flat Condylomata of the Vocal Cords—TANTURRI—

Giornale Internazionale Delle Scienze Mediche, Anno XXII.

In 1875 Massei demonstrated the first case of flat condyloma of the vocal cords. Chiari and Worach later observed five cases of mucous plaques—three times on the vocal cords, once on the epiglottis and once on the mucosa. Bassols Prim, in addition to the lesions which are produced in the larynx during syphilis, admits the laryngitis with alterations in the color of the mucosa, either on the vocal cords or on the other parts without pain and without expectoration. Ficano reports a case of laryngitis with small ulcers, with similar ones on the borders of the tongue, the lips and the palate. Symonds refers to a patient affected with secondary syphilis, who suddenly lost his voice. There was congestion of the vocal cords and then fixation. Later on the right side of the larynx became infiltrated. In consideration of the rarity of this affection, the following clinical history is recorded: Female, aged twenty-four, contracted syphilis some months previously. After two and a half months from the initial lesion she attended Professor Massei's clinic. At the first visit there was noticed an infiltration of the vocal cords, but particularly of the left, with noticeable dysphonia. This infiltration suggested tuberculosis, but the examination for the tubercular bacilli was negative. A fortnight later, when the patient presented herself, condylomata were noticed on the lips, the tip of the tongue, near the frenum and on the palate. The larynx was markedly inflamed; infiltration of the vocal cords; the margin of the left was rough and irregular. On the upper surface of this a zone of marked infiltration, with epithelial destruction and opalescent exudation, irregular margins and complete dysphonia. Hypodermic injections and sprays of sublimate were ordered. In a fortnight the cure was almost complete.

FERRERI. (Translated by StClair Thomson.)

Foreign Bodies in the Air Passages—Radioscopy, Tracheotomy—

C. POLI—*Gazzetta degli Ospedali e delle Cliniche*, Anno xxi, No. 84, 15 Luglio, 1900.

Two cases of foreign bodies in the trachea, the position being settled by the Röntgen rays and the bodies being expelled by cough through a tracheal opening. The author remarks upon the great tolerance of the respiratory tract, since the first case was operated after ten days and the second after twenty-eight days, and he recalls the statistics of Bunch and Lake. The importance of the Röntgen rays is noteworthy in this case.

G. FERRERI. (Translated by StClair Thomson.)

A Case of Cyst of the Epiglottis—W. L. BALLARD (Columbus, Ga.)—*N. Y. Med. Journ.*, August 25, 1900.

This condition was observed in a male, fifty-two years of age. He complained of a sticking sensation in the throat, with a tendency to clear the throat, and a feeling of fatigue in attempting to use the voice for a prolonged period.

On examination a cystic growth, the size of a small filbert, with a broad base, was seen on the anterior surface of the epiglottis.

A gelatinous substance followed an incision into the growth. In two weeks the cyst refilled and was again incised, and a probe coated with chromic acid was employed as a curette.

Five months after this treatment there was no evidence of its return.

M. D. LEDERMAN.

Congenital Laryngeal Obstruction.—C. H. McILRAITH—*Lancet*, April 28, 1900. Harveian Society.

The author read notes of a case of congenital laryngeal obstruction in which sudden death took place from laryngeal spasm (a specimen of the larynx was shown). The case was that of a female child, aged six months, who had been seen to be suffering from persistent respiratory stridor from the age of six weeks. There were no other cases in the family, and no history of injury at birth or convulsions after. The child had, however, congenital syphilis. The stridor was entirely inspiratory, expiration being noiseless. It varied at different times both in character and in intensity. When the breathing was regular or superficial the stridor was diminished or absent. It was absent during sleep. It was increased when the child's breathing was irregular or deepened, as after crying, and also by changes of temperature, as on taking the child from a warm to a cold room, and to a lesser degree from a cold to a warm room. There were no signs of obstruction. The mucous membrane of the nose and naso-pharynx was generally relaxed, and there was some small amount of post-nasal adenoids present. On examination of the larynx the epiglottis was seen to be sharply folded and incurved on itself. The aryteno-epiglottic folds seemed to extend from the tip of the epiglottis to the tips of the arytenoids as thinned bands, which were closely approximated to one another. Thus the upper aperture of the larynx was reduced

to a narrow slit with two small openings, the one at the tip of the epiglottis and the other between the arytenoids. The thin folds seemed quite flaccid, and flapped to and fro on respiration. There was some slight edematous swelling over the arytenoids. The child died suddenly two months later, apparently from laryngeal spasm. A post-mortem examination had been obtained. The larynx gave appearances much the same as seen during life, except that there were evidences of considerable relaxation of the mucous membrane over the arytenoids. The case was brought forward as one of interest on account of the comparative rarity of the disease, the possibly fatal issue, and as confirmatory by means of post-mortem evidence of the views put forward by Dr. G. A. Sutherland and Dr. Lack.* From the post-mortem appearances it was impossible to consider otherwise than that the stridor was purely mechanical, produced by the valvular action of the upper aperture of the larynx, depending partly on the peculiar malformation and partly on the flaccidity of these parts in infants. If post-nasal adenoids affected it at all it would only be by rendering the tissues more liable to relaxation, and thus producing still more narrowing of the upper lumen of the glottis.

Dr. Herbert Tilley pointed out that Avellis (Frankfort) had stated that in some cases congenital laryngeal stridor was due to pressure on the trachea by an enlarged thymus gland. The condition was (in such cases) at once relieved by removing portions of the gland or stitching it forward on the sternum, or by performing tracheotomy and inserting a long tube which passed beyond the obstruction.

Dr. Lack said that the specimen was an extremely interesting one to him, as it was a further proof of the correctness of the views which Dr. Sutherland and he had expressed as to the pathology of this disease, and quite fatal to the hypothesis of those who had ascribed the disease to adenoids.

Replying to Dr. Tilley, the author stated that the thymus gland was of the usual size, and that in a case of pressure on the trachea by an enlarged thymus which he had seen the character of the stridor was quite different, and was both inspiratory and expiratory, chiefly expiratory.

STCLAIR THOMSON.

* *The Lancet*, p. 653, September 11, 1897.

V. DIPHTHERIA, THYROID GLAND, ESOPHAGUS, ETC.

Endoscopy of the Esophagus and Stomach—GEORGE KELLING—
Lancet, April 28, 1900.

After an historical review of the efforts made during the last thirty years to obtain a view of the interior of the esophagus in a living subject, the writer describes his own instrument based on the principle of a curved hollow tube, which after introduction can be straightened. The paper, while interesting, is too long to abstract, but it is worth studying, as the writer feels sure that excellent results will be obtained by well-trained specialists with esophagoscopy and gastroscopy.

STCLAIR THOMSON.

The Treatment of Severe Cases of Diphtheria with Saline Infusions—E. E. LASLETT—*Lancet*, October 20, 1900.

Saline infusion has now become a well-recognized therapeutic measure in many forms of acute septic disease. This paper is a preliminary account of the results of its use in cases of severe diphtheria. It is generally considered now that under the influence of antitoxin treatment numerous cases of diphtheria recover from the acute stage that would have been fatal, in all probability, in the first few days of illness in the period before the introduction of antitoxin. Unfortunately, however, these cases are frequently disappointing in later stages. At a variable time, after all membrane has disappeared, sometimes as early as the seventh day of illness, signs of serious heart failure appear, accompanied, as a rule, by persistent vomiting. So frequently does this happen, that after some experience of diphtheria work, one can foretell with considerable accuracy which cases will develop this heart failure, a most serious sequela, which in the majority of instances proves fatal.

The pathology of this condition has been well studied, and extensive fatty degeneration of the heart muscle has been found in nearly all cases. Villy* found it markedly present in fourteen out of fifteen cases in which death resulted from cardiac failure, and an important feature is the early period of the disease at which the fatty change develops. In one case Villy found it as early as the fourth day of illness. The fatty degeneration of the heart muscle is probably independent of nerve injury, but whether this is so or not, it is certainly ultimately the result of the action of diphtheria toxin.

1. *In the Late Stage.*—Its use is particularly indicated when, during the persistent vomiting, nutrient enemata are also rejected. Inasmuch as the fluids of the body are thus constantly diminished, the blood must become more viscid, and the work of the heart thereby much impeded. The absorption of a considerable quantity of saline fluid will therefore tend to diminish this viscosity, and will consequently relieve the heart. Some six cases were treated in this way, but they were all ultimately fatal, probably because the damage already done to the heart was too severe to be recovered from. However, the treatment seemed to prolong life, and certainly made it more tolerable by the relief of the thirst and restlessness which are essential accompaniments of this condition.

2. *In the Acute Stage.*—At an early stage of the disease, the introduction of additional fluid into the blood system will, it may be supposed, dilute the toxin, or help its excretion by producing diuresis. We are not aware of any experiments to prove the excretion of diphtheria toxin by the kidneys in man; but in the case of the lower animals its excretion in the urine has recently been demonstrated by Cobbett†.

* *Medical Chronicle*, September, 1899.

† *Lancet*, July 7, 1900, p. 22.

Fifteen cases in all were treated in this way. They were chosen on account of their severity, the main indications being the presence of much spreading membrane, nasal discharge, and great fœtor of the breath. The infusion was carried out in the first instance as soon as possible after the admission of the patient, and was continued during the first, second, and occasionally the third day. A solution of common salt of the strength of two teaspoonfuls to the pint was always used. The injections were made under the loose skin below and outside the right breast. The pressure used was that of about from $1\frac{1}{2}$ to 3 feet of water, which is quite sufficient and insures the gentle and uniform distension of the subcutaneous tissue, and thus produces very little pain. The salt solution was boiled, then covered over in a pint measure, and allowed to cool till it was just as hot as the hand could bear. It is impossible, however, to judge of the temperature of the saline solution as it passes into the skin, on account of the rapid cooling that takes place in the india rubber syphon tube. By this means from 10 to 15 ounces may easily be injected in half an hour, and it is surprising how little discomfort it produces. During the process the children are readily soothed, and quite commonly fall asleep towards the end of the injection.

The condition of repose brought about by the infusion is an undoubted fact, and is probably due partly to the sense of warmth produced, and partly to the filling of the blood-vessels as absorption of the solution occurs. Certainly the pulse tension as determined by the finger rises rapidly. Craig† in a large number of observations on insane patients found that in melancholia the pulse tension is raised, while in mania it is below normal. In a subsequent paper‡ he refers to the beneficial effect of rectal injections of salt solution in conditions of maniacal excitement. One of the worst features in a severe case of diphtheria is the condition of extreme restlessness during the first few days of illness, which prevents anything but mere snatches of sleep being obtained. The relief of this condition by the infusion is very real, and contributes considerably to the beneficial effect of the treatment. Owing to the youth of the patients and the severity of the illness, the urine is commonly passed in the bed, and consequently it has only rarely been possible to determine the influence of the treatment in the direction of diuresis. In one or two cases diuresis was certainly well marked, and it continued for a day or two after the treatment had ceased.

STCLAIR THOMSON.

† *Lancet*, June 25, 1898, p. 1742.

‡ *British Medical Association*, 1 00.

VI. EAR.

Removal of a Foreign Body from the Ear—JAMES G. MACASKIE
—*Lancet*, June 2, 1900.

The author was called in to see a schoolboy who had pushed into the right meatus a piece of india rubber which had previously been attached to a lead pencil. It was found that he had driven the rubber well in, and as it was almost an exact mould and presented to view an entirely flat surface, it was impossible to catch it with forceps, and syringing did not seem likely to improve matters. The author, therefore, on the following day, teased out the end of a small piece of twine, and giving this a good coating of seccotine*, pushed it tightly against the india rubber, packing it closely all round with cotton wool. This was allowed to remain in position for twenty-four hours when there was firm cohesion, and not the slightest difficulty was found in withdrawing everything *en masse*.

STCLAIR THOMSON.

On Alterations in the Organ of Hearing Produced by the Explosion of Firearms—A. LUZZATI—*Annali di Medicina Navale*, Anno vi, Fasc. 5, 1900.

The causes of change are essentially reduced to a sudden variation of pressure in the middle ear, or to a violent shock, which is the equivalent, and the following three questions are suggested:

1. Can a loud noise, like a cannon-shot, produce rupture or other lesion of the tympanic membrane?
2. Can the same cause without tympanic lesions produce alterations in the internal ear sufficient to induce any notable deafness?
3. Admitting the possibility of these facts, what are the points for distinguishing these lesions from similar ones depending on other causes?

After abstracting statistics and practical observations from well-known otologists and comparing them with his personal experience, the author concludes with regard to 1 that "if a rupture of the drum is possible by loud noises or violent explosions, this is certainly an exceptional occurrence and nearly always favored by progressive changes in the tympanic membrane, which render it less elastic and resistant." With regard to 2 he establishes that "in general terms and in the greater number of individuals the action of loud noises is explained by the symptoms of labyrinthine commotion, more or less serious, but nearly always transitory. More marked and persistent changes (hemorrhages, labyrinthitis) are certainly exceptional and should be received *cum grano salis*." "In addition to the statistics of otologists, he says that they have nearly always as a substratum and as a predisposing cause a progressive affection of the middle ear, such, for example, as ankylosis of the ossicular chain, which, owing to its rigidity, transmits without breaking up the violent vibration to the labyrinth." "The con-

* Seccotine—A sort of patent glue or stickfast.

tinuation of such action for years and years provokes a cell inflammation of the labyrinth, with deafness and subjective tumors, which we may find in smiths and boilermakers.

The common opinion is negated that by a loud noise it is easy to rupture the membrane."

With regard to treatment the author recommends the abstention from lotions more or less antiseptic, which often develop a purulent otitis, while for the trauma of the drum a small plug of antiseptic gauze gives the best result. For otitis iodide of potassium, injections of pilo and other treatment that produces perspiration, favors the natural regression of the lesion.

G. FERRERI. (Translated by StClair Thomson.)

Fungus Disease of the Ear—W. K. HATCH AND R. ROW—*Lancet*, December 1, 1900.

In order to show the frequency with which fungus disease of the ear is met with in Bombay during the rainy season, one author (W. K. H.) collected all the cases treated at the Jamsetjee Jeejeebhoy Hospital during the month of October, 1899. He verified diagnosis by microscopical examination, and in several instances Dr. Row made a culture on agar agar. Medical practitioners in Bombay often speak of the liability to disease of the external ear in this climate, and they generally diagnose the conditions as furunculosis. In most cases the disease is really aspergilliosis, and the small pustules seen in the canal are merely the result of a growth of a fungus. Von Roosa in his able work has tabulated several varieties, and he states that, in his opinion, the fungus is the cause of the eczematous condition of the canal and not secondary to it. It will be seen from the tabulated cases that in only one was there any pre-existing disease of the ear; this patient had a perforation and discharge some months before, which had been treated and stopped by means of nitrate of silver. The ear remained well until the appearance of a fungus; there was therefore no discharge seen before the symptoms were experienced. Formerly there had been several recurrences of discharge with inflammatory symptoms from the affected ear, and on none of these occasions was any fungus found, so that probably the fungus in all the cases was really primary. There appears to be a considerable difference in the symptoms due to fungus, varying from slight to considerable deafness, and attended by pain, which is occasionally severe. There is also a good deal of discomfort; generally described by native patients as "heaviness" and sometimes also "stuffiness," but this symptom varies according as to whether the canal is blocked up by epithelium and fungus, or whether the growth is merely a coating to the canal of slight thickness. In most cases the membrana tympani is obscured from view by the growth, or red patches may be seen on it here and there. Roughly speaking, cases may be divided clinically into dry and moist; in the latter class, the symptoms of eczema are present to a greater or less extent, and there is therefore a watery or slightly purulent discharge from the ear, and

slight pain and deafness with a feeling of heaviness are usually complained of. In the majority of cases the *aspergillus niger* is found. There is a quantity of moist-looking epithelium on which black particles are plainly visible, having an appearance of grains of gunpowder. If the particles are plentiful, there is more black than white visible; but if there are only a few, it may not be easy to distinguish them readily. After syringing and the removal of the mass, the walls of the canal are seen to be red, and denuded of epithelium and often irregular, with small furuncles and swellings, and the membrana tympani may be bright red in color or dull and sodden in appearance. Often the *aspergillus flavus* can be seen growing on the surface of small superficial pustules, and if in any quantity the small balls of sporangia are plainly visible. The growth of *penicillium glaucum* gives a fluffy appearance to the surface.

In the "dry" variety the symptoms of pain, uneasiness, and deafness are also complained of, but there is no discharge, and the canal on examination may be found either to be stuffed full of epithelial debris with yellow, black or brownish-looking particles sprinkled on the surface, or the walls of the canal are coated with a crust, usually of a darkish color, on which the fungus is seen growing. The appearance is not unlike that of rhinitis when dry crusts coat the surface of the mucous membrane; the tympanum is therefore visible, but the surface is generally partially coated with a similar fungus to that on the canal. Sometimes white patches on the tympanum also are met with, and they are difficult to remove. After syringing, the walls of the canal appear red but dry, and the membrana tympani is not so often inflamed as in the moist variety. Diagnosis is readily made after a few observations, and confirmed by microscopical examination; sometimes the amount of spores is largely in excess of the mycelium.

The treatment adopted in both varieties is the same, and it consists in syringing very thoroughly and using iodoform and boric acid in equal parts. The canal may be swabbed out with camphorated salol, but the drugs used are not of themselves so important as frequent cleansing. It is not necessary to say more than this, that cleanliness and dryness are most efficacious.

STCLAIR THOMSON.

VII. MASTOID AND CEREBRAL COMPLICATIONS.

Cases of Mastoid Inflammation—CHARLES W. KOLLOCK—*Carolina Med. Journ.*, March, 1900.

In the first case, after infection of the mastoid cells had occurred, the middle ear improved, and the mastoid involvement was only suspected from the external symptoms.

In the second case, immediate operation appeared to be indicating but it recovered under aseptic treatment.

The last case had positive mastoid involvement without pain or increase of temperature.

W. SCHEPPEGRELL.

Mastoid Disease, Acute Otitis Media and Pyemia Occurring in an Epileptic as a Result of Injury—R. A. WILSON—*Lancet*, May 12, 1900.

A married man, aged thirty-seven years, who was epileptic, was admitted to the Rubery Hill Asylum on April 27, 1892. He enjoyed a tranquil existence until January 26, 1893, when at 3 a. m. another epileptic, in a frenzy of acute maniacal delirium, darted out of an adjacent bed and severely belabored him about the head with an earthenware chamber utensil. For several years after this from time to time the patient complained of a deep-seated pain over the right mastoid process, together with slight deafness, but no objective symptoms could be made out, nor was there any bulging of the postero-superior wall of the meatus. On November 16, 1899, he fell in an epileptic seizure, sustaining an incised wound of the right eyebrow and also a contusion of the right ear. On the 24th of that month a purulent discharge made its appearance from the affected ear, and on the 27th the tympanic membrane was found to be perforated. On December 4th the discharge was much more profuse, the temperature being 100° F. On the 5th the discharge was still greater, and the ear required syringing six times a day. The temperature was 100°. On the 11th there was a slight diminution of the discharge, the temperature rising at night to 100°. On the 12th the temperature rose from 98.8° in the morning to 102.2° in the evening, on the 13th it rose from 99.6° to 103.4°, while on the 14th it dropped from 104.4° to 103.4°. On the 15th there was still much discharge, the morning temperature being 104.2° and the evening 106.4°. The typhoid character of the temperature continued for the next two days, rising from 104.6° to 106.4° on the 16th, and from 101° to 104.8° on the 17th. On the 18th the morning temperature was 101.4° and the evening temperature was 101.6°. The discharge had diminished. He was dull, stupid and irritable, and appeared to have difficulty in collecting his thoughts when trying to answer questions. On the 19th the temperature, which was 99.2° in the morning, rose to 104.8° in the evening. On the 20th the morning temperature was 99.6° and the evening temperature was 103.2°. An accumulation of pus was incised and evacuated over the left elbow-joint. On the 21st an abscess over the left metacarpus was opened. The discharge from the ear, which had diminished somewhat, became more copious. Perspiration was very profuse, alternating with rigors. When addressed he "rambled" in an incoherent manner. The morning temperature was 102° and the evening temperature was 101°. On the 22d the temperature in the morning was 100°. A collection of pus over the right ankle-joint was opened. The condition of the patient was very grave. There was marked pallor of the countenance, and he was unable to speak, though able to take fluid nourishment. He died at 12.30 p. m.

Extract from Post-mortem Book.—The dura mater over both petrous and mastoid portions was unaffected, as were also both anterior and posterior surfaces of the petrous and external surface of

the mastoid. There was no change in the lateral sinus. The bone forming the roof of the tympanum was removed and disclosed pus in that cavity. The mastoid antrum was full of thick, cheesy pus; its walls were thin, but hard and dense. Free communication existed between this cavity and the tympanum.

Remarks.—It seems reasonable to suppose that the injury inflicted in January, 1893, interfered with the nutrition of the mastoid cells and was the starting point of the whole train of ill-effects, while the fall on November 16, 1899, hurried on the process to a fatal termination. Several circumstances in the case strike one as being peculiar: (1) The fact that the disease commenced in the mastoid portion and spread to the middle ear instead of *vice versa*; (2) the long period of latency during which the only symptoms were deep-seated pain and slight deafness; (3) the rapid progress to a fatal termination when once the process had spread to the tympanum; and (4) the limitation of the disease to the mastoid and tympanic cavity, and the non-implication of the membranes and lateral sinus, although the ultimate cause of death was pyemia. STCLAIR THOMSON.

Two Cases Illustrative of Cases of Sinus Pyæmia with Unusual

Results—JAMES KERR—*Lancet*, October 13, 1900.

Increased attention is now being paid to aural diseases. The recorded mortality from otitis has increased from five to twenty-five per 1,000,000 in twenty years, between seventy and seventy-five per cent of these deaths occurring in persons under fifteen years of age, so that the suppurative ear disease so frequently neglected after the exanthemata, is of serious import to life within a few years. Its import arises from extensions beyond the middle ear leading to abscess or pyæmia. Ten years ago these suppurative complications were looked upon as almost fatal; they are of the gravest import still, and one of the most formidable is sinus pyæmia. Two cases recently seen are worth recording; they are typical in clinical features, but unusual in the result. The treatment followed in both cases was by operative measures, and the use of anti-streptococcic serum.

One case proved fatal, although the sigmoid sinus was opened, the jugular tied, and anti-streptococcic serum used.

Post-mortem examination showed extension of the thrombus, back from the obliterated part of the sinus and up the petrosal sinuses, general discoloration of bone, erosion and purulent lymph about the jugular foramen, several perforations punched out of the vein wall, and communication from the floor of the tympanum through the jugular dome, by which route infection seemed to have spread.

The second was treated in the same way, and recovered.

The mechanism of these cases is usually a chronic suppurative otitis with extension to the mastoid antrum and cells, which discharge freely until suddenly, either from increased thickening of the mucous membrane or from slow thickening of the bone, the antral passage becomes blocked and discharge ceases. The first signal of danger—pain—follows, with violent inflammation from the retained pus, which

often in children breaks its way through the ununited squamoso-mastoid fissure, but in others more often finds its way into cerebral, sigmoid, or cerebellar fossæ. The usual route leading to sigmoid sinus pyæmia is perforation from the antrum into the knee of the fossa, but in Case 1 the perforation appears to have followed a very unusual route in perforating the jugular dome. When the local focus becomes diffused and the chest becomes affected, recovery can scarcely be expected, yet this took place in Case 2, and probably was greatly aided by the use of the anti-streptococcic serum. With a rapid pulse and pyæmic temperature early exploration of the sinus should be made, and if it be found to be affected, operative measures for the thorough removal of all septic material should be resorted to.

STCLAIR THOMSON.

VIII. THERAPY.

The Advantages of the Spray in Pseudo-Membranes of the Pharynx—D. C. BROWN—*New Eng. Med. Journ.*, Jan. 1900.

An interesting introduction of the pathology of pseudo-membranous formations upon the tonsils and pharynx is given. In true diphtheria the author believes that the toxin can be neutralized by antitoxin, though this remedy does not stop the production of the toxin. The antitoxin does hasten the separation of the pseudo-membrane. He believes that the spray is better than any other means, to attack the membrane. For its effective application the tongue must be depressed and the spray directed diagonally across the throat. Avoid any healthy tissue with the direct force of the spray.

He recommends first the use of hydrozone, which breaks up the pseudo-membrane and makes way for other antiseptics. The second spray is a solution of formaldehyde, one-fourth per cent, or the following combination:

R Sol. formaldehyde, $\frac{1}{4}$ per cent	3i to 3ii
Kali chlor	3ii
Acid borac	3i
Glycerinæ	3ss
Aquæ	q. s. ad. 3iv

M. D. LEDERMAN.

Lupus Vulgaris Treated by Freezing by Means of Chlor-ethyl—

C. A. DETHESSEN—*Hospitalstidende*, No. 1, 1900.

Patient, female, æt. forty-six years, with lupus faciei, involving the whole nose and adjacent parts of the cheeks; the skin greatly infiltrated, swollen, bluish-red, covered with ten distinct ulcerations. The case was of twenty years duration, beginning at tip of nose. The author excised the ulcerated area and then began a series of freezing applications.

Chlor-ethyl was sprayed over the affected area every second day for one-half minutes. Following each treatment there was reaction, swelling and redness, which was temporary in character. After six

applications all evidence of ulceration had disappeared and the skin presented a normal appearance. The application of chlor-ethyl is painless. To avoid inhalation of the spray, the patient's nostrils were plugged, and respiration was accomplished through a glass tube.

GOTTLIEB KIAER.

Electric Light; Its Physiological Action and Therapeutic Value in Tuberculosis of the Throat and Lungs—W. FREUDENTHAL

—*Med. Record*, October 27, 1900.

The author quotes the investigations of Dr. S. Bergel, of Inowrazlaw, who experimented with the effect of light and darkness on the ciliated corpuscles. The method of procedure is detailed. This investigator found that if a ciliated corpuscle in motion was placed under the microscope, and the latter was darkened, the motion of the corpuscle became slower and slower, and finally ceased. When this same corpuscle was again exposed to light the oscillation recommenced after a latent period, depending upon the duration of the exposure to darkness.

The actual labor by the ciliated cell in the body is enormous, as shown by the experiment of Justus Gaule, upon the frog.

The author states that some of his cases of laryngeal tuberculosis have been relieved of their painful symptoms by the application of the electric lamp to the outside of their larynx. Dysphagia was also improved with this method.

Care must be taken in applying the lamp, as severe burns may result. The author suggests that the electric light be tried in pulmonary disease.

M. D. LEDERMAN.

IX. NEW INSTRUMENTS.

The Eustachian Bougie—L. B. LOCKARD, Pasadena, Cal.—N. Y.

Med. Journ., December 29, 1900.

In an interesting paper upon this instrument, the author offers the following résumé:

Except when used as an electrode, it is applicable in two conditions only: stenosis and tinnitus.

The therapeutic effects are uncertain; sometimes harmful, frequently beneficial.

It effects its purpose in two ways: by pressure upon contracted tissue and by reflex influences upon the auditory center.

It should be given a trial in all cases that have resisted other procedures.

Its use must be stopped upon the first sign of increase in the local trouble.

If care is taken, the dangers said to attend its application will be accidents of the greatest rarity. It has a definite field in aural surgery.

M. D. LEDERMAN.

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It is our purpose to furnish in this Department a complete and reliable record of the world's current literature of Rhinology, Laryngology and Otology.

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BOOK REVIEWS.

The Year Book of the Nose, Throat and Ear. G. P. HEAD, M.D., and ALBERT H. ANDREWS, M.D., Professors in the Chicago Post-Graduate Medical School, Etc. The Year Book Publishers, 100 State street, Chicago, Ill., 1901.

"The Year Book for 1901," just fresh from the publishers, merits the approval which was bestowed in our columns on the initial volume. It consists of 416 pages altogether, and is of the same general character as the book for last year. The nose and throat department occupies 222 pages, the ear section 153, and the abstracts in the latter division are especially full.

References are made to articles in 301 American and foreign journals, and to the transactions of three societies. The subjects are conveniently classified, as a rule, but occasionally are a little confused; however, this is a matter to be easily corrected in subsequent volumes. It is no trifling task to collate and publish promptly an epitome of the work of many hundred writers in all parts of the medical world for a twelvemonth, notwithstanding that all of the papers are not abstracted. In numerous instances each writer is merely referred to, with only words enough to indicate his opinion.

A fair idea may be gained of the scope of the work when we consider that two and one-half pages are devoted to the subject of the suprarenal gland; there are twelve abstracts of the subject of hay fever, twenty-eight on atrophic rhinitis, thirty-six abstracts and references on tuberculosis of the larynx, forty-seven on the pharyngeal tonsil, seventy-seven on diseases of the cavities accessory to the nose, twenty-three on sinus thrombosis and forty-five on mastoid diseases.

No one is so accomplished in this specialty that he cannot derive much profit from this rich storehouse of information. S. S. BISHOP.

Tuberculosis: Its Nature, Prevention, and Treatment with Special Reference to the Open-Air Treatment of Phthisis. By ALFRED HILLIER, B. A., M.D., C. M., Fellow of the Royal Medico-Chirurgical Society, London; Member of the Council of the Medical Graduates' College; Member of the Council of the National Association for the Presentation of Consumption and other forms of Tuberculosis; Honorable Secretary to the London Open-Air Sanatorium. With thirty-one illustrations and three colored plates. Pages, 243. Price, \$1.25 net. Cassel & Co., publishers, London, Paris, New York and Marlborough.

This volume, as its title indicates, considers the nature, prevention and treatment of tuberculosis in its numerous aspects. As the author indicated in his preface there is no one book in England devoted to this subject as a whole. We have numerous treatises on public health, etiology, pathology and bacteriology, and considerations from the standpoint of clinical medicine and special practice.

The intention of this work is to set forth in concise form in one volume points of interest, reference and value on this many-sided question. Separate chapters are devoted respectively to the nature of tuberculosis, the clinical forms, transmission, preventive measures, therapy and finally the consideration of national movements against the spread of tuberculosis. The concluding chapter contains numerous brief, succinct axioms and remarks constituting a résumé of the volume.

Special reference to the open-air treatment of phthisis, the bacteriological examination of sputum, the technique of the application of tuberculene and other valuable data.

Guida Alla Diagnosi Medico-Legale Della Sordita. (Guide to the Medico-Legal Detection of Deafness.) By G. OSTINO, Florence, *Scuola Tipografica*, 1900.

Italian otological literature has recently been enriched by this new work, which further demonstrates the progress of the study of ear diseases in the peninsula and the activity of our university clinics.

The author, a surgeon-captain in the army and at present teacher of otology in the military medical school of Florence, was formerly honorary assistant to Professor Gradenigo, and from the teaching of the distinguished specialist of Turin, as well as from his own experience, he has gathered considerable knowledge. This is revealed in the important and useful book just published. Even more than a guide to the medico-legal diagnosis of deafness, it might be entitled a manual of semiology of the ear, being indeed a collection of the various methods of examining the ear and of testing their value. From this point of view the treatise could not be better compiled, and it would have certainly been complete if the author, instead of being too much taken up with the medico-legal aspect, had given more space to recording the valuable progress that otology owes to various Italian researches.

We do not share altogether the views of the school to which he belongs in giving the greatest importance to the functional examination in preference to the objective; and the reason is due to the absence of certain knowledge about some fundamental questions in respect to acoustic function. But notwithstanding we commend the gallant author for the general design and the scientific exactitude with which he has compiled his treatise.

Indeed, we trust that in a new edition, which ought soon to be required, certain defects will be made good, the more so as the author has supplied the want by offering to practical surgeons and those occupied with deaf-mutes an interesting and useful book.

G. FERRERI. (Translated by StClair Thomson.)

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No. 3.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

PAPILLOMA OF THE LARYNX.*

BY FRANCIS J. QUINLAN, M.D., NEW YORK.

Professor of Laryngology and Rhinology, New York Polyclinic; Laryngologist and Otologist
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Before claiming the attention of the section to the subject assigned to me on this evening's programme, it might be in good taste, in this the last meeting of the year of the century, to regard hurriedly a few of the factors that have led up to the formation of this, the youngest, but still recognized to-day as one of the strongest specialties of modern medicine.

We are now at the close of a century that has marked special epochs of history to the medical profession, but more closely does it bind that domain of medicine of which this section is a representative integral.

We are to-day able to study deeper regional disease with the accuracy of almost surface conditions.

It is eminently proper then, ere we pass from the old century to the new, that some words of tribute be uttered to express our deep gratitude to those who have hewn the forests of darkness and have enabled us to gaze upon such a broad vista of scientific sunshine as these great pathfinders of the past have left behind.

Before the days of the laryngoscope and cocaine we can hardly conceive what obstacles must have been encountered in the direction of diagnosis, not to say of the treatment of disease of the larynx, but since their advent laryngology has enjoyed a new birth,

* Read at the New York Academy of Medicine, Section of Laryngology and Rhinology, Wednesday, December 26, 1900.

and developed by the many modern appliances that are used daily in our operating rooms.

Within a few decades these contributions have stimulated our energies and our endeavors have been strengthened in new lines of scientific research. Whilst to-day we enjoy the literature that brings to our study "That refined product of modern thought," it should also keep awake within us a deep reverence for those pioneers whose memories stand like mountain beacons that reflect the light down the dark valley of medical thought and lift us by their words and example to higher aims, and loftier ideals in the study of special medicine.

How reminiscent we become by turning to our operating tables that would bring to us floods of thought—the faultless mechanism and masterly appliances devised by those toilers of science who have since dropped in the race of life.

That modern Colossus of progressive genius, Morell MacKenzie, has simplified by his essays and ingenuity much of the darkness that formerly enveloped the treatment of laryngeal growths. Our own Elsberg has had few peers that could cope with his gigantic intellect and masterly mechanism for laryngeal work. The lustre that surrounds the name of Wilhelm Meyer will forever stand resplendent before the world of advanced medical thought, and last, but by no means least, the quiet, unobtrusive seer of modern medicine, Joseph O'Dwyer, whose scholarly labors have placed not only the medical world, but the human race as well, under a perpetual debt of gratitude. Of this galaxy we are indeed justly proud.

Knowledge comes, but Wisdom lingers,
And I linger at the shore;
Yet the Individual withers,
But the World is *more* and *more*.

And now let us turn to the topic of the evening.

By the term laryngeal papilloma we mean a benign affection of the mucous membrane of the larynx involving any or all of its structures, occurring single or multiple, and having distinct clinical manifestations. These conditions are caused by redundancy of the mucous membrane with proliferating tufts that produce interference with its function that subsequently may need operative interference. This papillomatous condition of the air tract was first observed with the advent of the laryngoscope, and from the time of Czermak, in 1863, to our own day, this subject has received the attention of many distinguished clinicians in laryngology.

The locality of a papilloma has much to suggest regarding its subsequent treatment, and as this may occur in any part of the larynx, yet its site of predilection is the anterior third of the right cord and the anterior commissure of the larynx, no good reasons have been advocated for the selection of these areas any more than we know that the discrete, or single, is found among adults, whilst the multiple is frequently seen in childhood. We find statistics prove that these growths may appear at any time of life or even during the prenatal state, Cousit reporting a congenital case and Chappelle showing that even at the early age of four weeks a child was seen with these manifestations. Even in adult life, when these growths can be easily seen, our efforts to relieve them, in many instances, are disappointing. The period of puberty is often associated with these nodules, and it is observed that the change of the voice has much to do with these structural deposits. However, at this period their growth is slow and is often confined to the supra-glottic space, whilst in children the sub-cordal region may be attacked, thereby increasing the obstruction to speech and respiration.

Oertel makes three microscopic divisions of the tumors:

1. Small pea-like nodules.
2. Larger and firmer.
3. May be large enough to occlude glottis.

The varieties of papilloma are indeed many, but brief allusion only will be made to their shape and appearance. Some of these tufts hold the connective tissue element in excess, whilst in others the mass is soft and friable, thus making up the berry-like picture that is so often visible in the larynx.

The size of these growths may vary from a small vesicle, or bleb, to a mass large enough to embarrass respiration. Coley recites a case of papillomatous tumor filling the trachea down to its bifurcation.

The classification of raspberry, cauliflower, etc., are not only confusing, but, I may add, in many instances, unnecessary; their color, whether a pale pink or purple red, is due entirely to the vascularity of the mass.

The peculiar histologic element of the wart is that its epithelium grows outward, whereas the cells of the epithelioma are inclined to turn inwards.

Frequency.—Papilloma of the larynx is the commonest of all innocent tumors and may occur in any or all parts of the laryngeal cavity. Evidence of its presence may be seen on the pillars

of the fauces, the margin of the epiglottis, penetrating the cavity, spring from the ventricles or may expend its focal intensity on the vocal cords themselves. Rosenberg found papilloma to exist in one of the 363 cases of laryngeal disease. In 1897 the same author published 231 cases of papillomatous growth. Dickemann's figures show that in 252 cases that 114 were boys and 100 girls, and in 38 the sex was not mentioned. Fourteen of these were under 2 years of age, 57 between 2 and 4, 38 between 4 and 6, 19 between 6 and 8 and 38 between 8 and 13. In 15 of these cases the age was not noted. There is a history of a pure papilloma existing in a patient 84 years of age, of 40 years' duration, which was subsequently removed and found to contain all the elements of a benign neoplasm.

Donellan records a case of sub-glottic tumor (papilloma) with a history of slight aphonia of 22 years' standing, with no other subjective symptoms.

Bruno found 54 per cent of all the laryngeal tumors to be papilloma. MacKenzie, 67 per cent; Fauvel, 59 per cent; Elsberg, 50 per cent; Schmitt, 10 per cent; Schrotter, 18 per cent; Jurasz, 55 per cent; Grazzi, 62 per cent; MacEwen, 35 per cent; Senn, 39 per cent. MacKenzie found that sex had much to do with his cases. For instance, he found that out of 100, 62 were males and 38 females. My own experience is about 3 males to 1 female.

One of the most important factors in laryngeal papilloma is the so-called warty diathesis, which plays no insignificant role in the development of these growths. MacKenzie, however, alludes to the contagion of these deposits.

Although syphilis has been recorded by Lennox Browne and others as the dark line in the rock of heredity, MacKenzie ably refutes this statement from the observation of a very large number of patients in whom the taint could not be ascertained, still the adverse view of so able an authority does not diminish the weight of evidence of others who can attest from their observation that the prolonged hyperemia soon gives rise to a superficial edema, with possibly erosion, and these may culminate in the laryngeal wart of doubtful nature.

Voice strain has been argued by many as a cause of these lesions. This is noted especially among the peddlers in our city thoroughfares and those compelled to use their voices out of doors. Changes in the cavity of the larynx from vocal fatigue or other depressing causes may bring about chronic inflammation. The use of alcohol and tobacco contribute their share in the production of these laryn-

geal nodules. Gout and rheumatism are thought by many to lay a soil for the formation of these growths. Micro-organisms and their chemical changes in the cavity of the mouth or throat, from caries or from *leptothrix buccalis*, by irritation, aid in the development of these distinct pathological masses. Tuberculosis and syphilis are recognized as factors; some writers include influenza and finally Ferreri remarks that pregnancy plays an obscure role. These are the causes in general, but we must study each individual tumor to find out its own special origin. Oertel says that in papilloma, especially the diathesis of scrofula, plays an important part. Climatic conditions and certain localities exercise an element in their etiology. Gerhardt mentions that in Wursburg, where the diseases of the breathing apparatus are very frequent, that benign tumors of the larynx are rare—out of 7,228 cases of laryngeal disease, only six of these growths were recorded. Also in Thuringen and Berlin the same conditions prevailed—Woods and Hayes observed the rarity of this affection in Ireland; McBride and Watson also arrived at the same conclusions regarding Scotland, and Quaife repeats the same of Australia.

Lesions of the throat and naso-pharynx must be considered as very important etiological factors, for these excrescences, either in childhood or adolescence, must always be regarded in the initial stages of the treatment.

The inflamed nodule, so often seen in vocalists' throats, from faulty use of the voice, whether by imperfect methods or defective technique in tone production, has resulted in some cases in an ulcerated tendon with its budding tufts showing the slow organization of masses of papillomatous tissue. This picture might be considered conjectural were it not pathic. Many singers, again, force the voice when suffering from a cold and very often produce conditions of a chronic catarrh with its resultant transformations that are never removed. To intensify this forcibly, I might quote from Collins in his able article on the faculty of speech, viz.: "That the voice tone when emitted from the glottic chink is a mere squeak and were it not reinforced by the *muscles* of the naso-pharynx and mouth, as well as the accessory spaces, its timbre, pitch and intensity would be lost."

Reynolds cites an instance of the simultaneous development of papilloma in the mother and child; this was found later to be of a specific type and disappeared under appropriate treatment. Montex, Fauvel, Poyet and others have found them to be in the same family, and this is undoubtedly the case, as they are not only in the larynx, but also in the skin of these individuals.

The larynges of these mouth-breathers tell the tale of deep congestion that sooner or later bears fruit of the struggle that goes on and it is gratifying to know that more unhealthy conditions do not arise as a result, upon such delicate and sensitive surfaces; the early cry of the infant, the croupy bark of the child, the snore of the adult, attest loudly the natural resistance when these physiological laws are violated. In the adult the loss of the resonating principle of the voice by nasal obstruction and pharyngeal lesions, thereby forcing upon the laryngeal muscles this extra work, only too soon shows the changes brought upon the mucous structures that may produce not only neoplasms of the larynx, but disturb its functions by compensating hypertrophy.

The laryngoscope must be employed to locate these lesions unless the patient is too small or too rebellious, and those of us who have digital technique can often map out these laryngeal irregularities without the aid of reflected light.

Green in his review of the pathology of papilloma alludes to:

1. The skin wart.
2. The soft wart.
3. Corns.
4. Horns.

The only difference between the epidermal and epithelial growths is that the former is held together with a thick, hard, stratified tunic, whilst the mucous membrane in the surfaces and vascular tufts are enveloped by a delicate epithelium and can be easily lacerated.

A wart is a simple fibroma that has become papillary by an accident of position. Papillomata may be large enough to occlude cavities, such as the bladder or larynx, or may in some instances give rise to fatal hemorrhage.

The pathological conditions are mainly visible on the mucosa, resulting in swelling and hypertrophy, whilst changes in pachydermia laryngis are evident in the deeper structures, showing marked infiltration that may extend, leaving the superficial parts absolutely unimpaired. Bosworth notes that we have here a proliferation of epithelium cells which pile up in such a manner as to produce a wart-like growth upon the surface.

We can refer with pleasure to the early pathology of Rokitansky and Virchow and consider the well-defined limits marked out by these authorities in their scholarly research of these benign lesions. Paget writes about the growth as a hypertrophy of the normal papillæ and Cornil speaks of these warts as having a tessellated epi-

thelium, while Foerster informs us that the blood loops are broader than the purely normal papillary branches with the superficial tissues degenerated. Others have found effusions of blood from voice straining result in proliferations of tissue which may or may not break down. Virchow again reiterates the fact that these growths must be regarded "as an outgrowth of pre-existing connective tissue."

I had a case of a child ten years old where there was a history of a prolonged and exaggerated attack of whooping cough. Subsequent examination showed small wart masses which were confined to the sub-glottic space and which disappeared after treatment for naso-pharyngeal adenoids. The diagnosis of any laryngeal disease is always a subject of serious thought. We have within this cavity and its ligamentous attachment conditions that may be overlooked until grave manifestations become apparent and it is only when respiration is interfered with or the voice impaired that these sufferers seek our aid.

The laryngeal probe is an agent of no mean importance in determining the consistency as well as the attachment of many of these growths. Lack's new method seems, according to his narration, certainly an ideal one, but it has failed me in many instances. If it will do what Dr. Lack says, I am sure it will render easy the examination of the larynges of children, which is at present a great drawback to many. Roentgen rays may no doubt serve its purpose here as well as elsewhere in determining the presence of growths of large size. Voltini's method of light transmission has aided *some* in diagnosis as well as in the treatment of this affection.

In children great difficulty is encountered even with the help of Kirstein's modified otoscope.

The varieties of neoplasm that invade this region are many, but by far the commonest is the one we are discussing. Dyspnea should always attract our notice as it is a symptom that should demand immediate interference. The writer recalls two sudden deaths in young children from such mechanical obstruction which might have been overcome were the parents intelligent enough to realize this critical manifestation. Epithelioma must always be considered when making a diagnosis of any laryngeal growth and frequent microscopic examinations of the mass, no matter how innocent, should be carefully made and sections of the removed tissue must be deep, in order to confirm diagnosis and admit of earlier operative procedures. We are all aware that constant slow irritation may provoke these degenerative changes. A careful examination

of the cavity and the surface of the true and false vocal cords where these masses are found as well as a microscopic examination will ratify our diagnosis in a large number of instances, but interference with any of the cordal excursions should be regarded as serious.

Tumor of the thyroid and thymus and their subjective symptoms must always be entertained in a diagnosis of these neoplasms. Prolapse of the ventricle of Morgani must not be confounded with papilloma, although errors of this nature have been made. Tufts of lingual tonsillar tissue so often seen at the brim of the larynx must be remembered in our diagnosis. Syphilitic excrescences should be regarded clinically and the therapeutic test of iodide of potash should be employed. Infra-glottic tumefactions as well as angiomas may be mistaken for laryngeal papilloma and the appearance of these masses must be carefully studied in order that diagnosis by exclusion can be made.

Lupus occasionally is met with, although a rare visitor to these structures, but must be entertained in our enumeration of ulcers and nodules of this cavity.

The symptoms of any laryngeal neoplasm will depend entirely upon the site occupied. Its manifestation may be dyspnea or dysphonia. Interference with speech or respiration shows that the vocal cords or the sub-glottic zone are the points selected, and arytenoids on the epiglottic involved where dysphagia is present. Cough, for instance, was observed only twice in 300 cases of laryngeal growths. Children have relatively more symptoms than adults, because the growths are generally multiple and the larynx smaller. Hemorrhage may occur with acute congestion. Pain may be present in some cases, and is probably due to the efforts of the cough to expel the growth. Spasmodic movements may render the extrinsic muscles tender and soreness is referable to the thyro-hyoid region. Spasmodic barks have been heard in the young; they may be regarded as croupy and the warty condition overlooked until serious mischief has been established. During sleep these growths are sometimes drawn into the glottic chink and make nights restless. These patients seem aware of impending danger as constant fear is written on their faces.

Laryngeal vertigo as a result of glottic obstruction has been recorded in a few instances, the frequent and prolonged occurrence of which must always be regarded as a serious menace to life. Again, some of these growths may give rise to little or no inconvenience. A case was recently cited at the British Laryn-

gological Association of a man who had a papillomatous growth on his cord for thirty years (and who I think refused treatment); with the exception of a slight hoarseness his condition was good.

Gleitsman says: "Unusual show of white color or even that peculiar grass-like appearance of tumors point strongly to malignant tendencies," although Whistler's case resembled the former symptom in color, was hard and sessile, yet was pronounced a typical papilloma.

Prognosis of papilloma of the larynx is usually good, although the point of attachment must be regarded as well as a careful study of its clinical manifestations. If embarrassed breathing is present we know that serious trouble may result at any time. We have all seen these masses disappear simultaneously either by a slow resorption or self-amputation during violent paroxysms of coughing. However, a cautious prognosis should always be given, especially in the young, as glottic spasm may arise and suffocative symptoms imperil the little victim.

It is a serious matter for the novice to attempt the removal of these growths as spasm of the glottis with acute edema has followed even expert manipulations.

In 1861 Bruns removed the first tumor from the larynx with success and the surgery of the larynx with the aid of reflected light began. Of course, the discovery of cocaine by Jelinek, and its application by Koller, has added subsequently to the success of these almost inaccessible conditions up to that time by endolaryngeal methods.

The modern treatment of papilloma contrasts in a unique manner with the results of thirty years ago. Every laryngeal growth should be removed now, if possible, by the *vias naturalis*. The conservative school has many advocates and successes have been reported from remedies consisting of inhalations and topical medication, such as astringents, caustics, chemical and actual. Jurasz, for example, cites cures from inhalation of the natural mineral waters. The alcohol treatment likewise has its advocates. Delavan, Browne, Chapelle and others recording many instances which were benefited by its use. The formalin method, too, has been lauded by Bronner and others. Lightly brushing these growths at times with pure lactic acid has replaced many of the other escharotics whose action seemed of no apparent benefit. Fowler's and Donovan's solutions in a few selected cases has brought about a certain degree of atrophy in some of my patients. The nose and nasopharynx, as was said in the foregoing pages, are largely responsi-

ble for many of the lesions, and to overlook regional medication of these cavities is to lose sight of one of the greatest aids to our present therapy.

In a hasty résumé of thirty-one cases of papilloma in children and young adults I have found that adenoids existed in all but three cases. The removal of these naso-pharyngeal masses even in the youths has diminished the laryngeal strain and helped the physiology of this resonating space to assert itself. Too much emphasis then cannot be laid upon these pathological conditions in the upper air tract and their disturbing influence upon the contiguous cavities. None can argue against the vaso-motor areas of paresis which depressing changes affect the mucous membrane of these structures and retard to a great degree the phagocytic action of the leucocytes.

Before passing to the mechanical agents of our medication I would like to mention in connection with the conservative treatment of this affection the use of Fowler's solution topically and sub-mucous injections of the same for larger growths, together with the suprarenal extract; this medication, with chloretone, acts as an anesthetic astringent upon the part and causes many of these small growths to disappear.

In the larynx, as well as in other parts of the body, must safety assert itself in the schooled touch and vision of the surgeon rather than the instrument employed by the operator.

The equipment of to-day for our surgical work enables us to cope more successfully with many of these diseases than we did formerly. Whilst many of us use with skill the forceps of Mac-Kenzie, no one will deny the superior mechanism for lateral growths of the guarded blades of Dundas Grant, although so able an authority has experienced a few accidents, viz., wounding of the ventricular band; however, this instrument is certainly as safe and as effective as any in use for endo-laryngeal operations.

The Continental student has learned to adopt by clinical education the tubular curettes of Schrotter, and the latter certainly speak for themselves, as suitable appliances for these smaller tufts which can be picked off readily under cocaine.

Intubation has been found to be useful in some few selected cases, but the resorption caused by the pressure of the tube has more of a theoretical than a practical value in the treatment of these conditions. Lennox Browne recalls an instance of hemorrhage in a child of three years following intubation for this condition.

We must regard with favor the advent of any agent that has proved effective to many operators. It would be unjust, therefore, not to mention in this line the galvano-cautery as an aid to modern therapeutics. However, this measure does not appeal to me as either scientific or surgical, and while I am slow to condemn its general use, I feel sure that the day is not distant when its action in the larynx will be as limited as it is in the nose at present. To quote the words of McBride, "The use of the galvano-cautery must be looked upon as a dangerous proceeding, more especially when applied to the vocal cords."

Several fatal cases of hemorrhage are recorded by Ferreri, Heinze; Grunwald and others, following the application of the galvano-cautery in the larynx. Heryng's currettes for cases of diffused papilloma have had many advocates. MacKenzie had to perform tracheotomy in three cases out of 100 after endolaryngeal growths were removed. Electrolysis can be used cautiously and is advocated by Fieber, who had great success and reports many instances of a successful termination of papillomata by this method of tissue absorption. Excision with the cold and hot snare is also employed with advantage in pedunculated growths.

The greatest possible danger has been pointed out by Lennox Browne (who, by the way, advises great caution) in opening the larynx, especially of cases *where papillomata are congenital*, and instances cases where pulmonary apoplexy resulted.

Time does not permit one to dwell upon the merits of the different operative measures that may demand our attention sooner or later for the relief of these sufferers, and while many of us are slow to undertake the major regional surgery of our treatment we can greatly aid, however, in promoting conditions which may in every sense be palliative and at the same time insure radical means when the conditions are imperative. MacKenzie and others regard thyrotomy as a grave and serious resort, and cite many instances of permanent impairment of speech following this operation. The Kirstein method for diagnostic purposes is an extremely valuable addition to our present methods, as the same author makes the courageous statement that it is equally useful in operations on the larynx. This position certainly gives us an absolutely true picture of the posterior wall, an area necessary to view in order to make a complete diagnosis. Dickemann recites three very interesting cases of the foregoing method in children. The endolaryngeal course should always be adopted unless dyspnea is a pronounced symptom. Some advise that tracheotomy should

be resorted to in the early stages of this disease, and after the operation, endo-laryngeal treatment should be continued and the patient be instructed to wear a tube at least six months or longer.

It may be proper to consider at this point of our paper the possible transformation of some of the benign to malignant growths. The percentage of course is small, but is worthy of our consideration, as even Semon outlines from the literature at my command such changes in almost $2\frac{1}{2}$ per cent of his cases. An emphatic contribution to this argument is made by Kyle in his recent text-book: "I see no reason why such a growth may not exist, and also why, owing to irritation, either from its location or from tinkering by the laryngologists, application of irritants (acids, etc.,), this benign growth may not become the site of a malignant tumor (carcinoma) or in the young become the site of a sarcoma."

The recently reported cases of Gibbs bear unmistakable evidences macroscopically of malignancy, but the type showed every evidence of such inflammatory deposit beginning as a benign growth. I am indebted to Dr. Gleitsman of this city for a recital of a case of carcinoma of the larynx where a complete laryngectomy was performed within the past three weeks. The pathologist reports that although the neoplasm bore every indication of malignancy there were yet visible evidences to show that the mass was papillomatous in the beginning.

A brief recital of three cases of mine where this transformation actually took place whilst the patients were under observation:

Case I. Joseph S., aged fifty-eight years, came to me about five years ago with some hoarseness which lasted a few months. Examination showed a pedunculated mass over the left cords with some deposits in the anterior commissure of a similar character. Growths entirely removed with forceps and snare, but rapid recurrence took place. Three subsequent examinations, made by Marple, Prudden and others, pronounced the case a typical papilloma; some time afterwards the mass became diffused and increased so as to require tracheotomy. Prior to this operation growth was examined and found to be a rapidly growing epithelioma.

Case II. Arthur J., forty-three years, merchant. Gave history of some huskiness of recent standing, and the laryngoscope revealed a nodule of an apparent warty consistency on the vocal cord, with a smaller tuft on the epiglottis. Mass removed and pronounced by Vissman to be distinctly papillomatous in structure. Subsequently rapid changes showed its degeneration and the man died, after a *radical operation for cancer of the throat*, of septic pneumonia.

Case III. George M., fifty-two years, was seen last July and exhibited before this section. A large pedunculated growth was visible in the larynx attached to the inner wall of the epiglottis; a portion of the neoplasm was removed and examined by two microscopists and was pronounced by them so forcibly of its non-malignant nature that the man carried their certificate in evidence. Subsequently an examination was made and the polypus pronounced epithelioma. A laryngectomy was done in St. Luke's Hospital by Drs. Farquhar Curtis and Clarence Rice of this city, who no doubt found every evidence of such degeneration.

Ward's recent contribution in this direction may serve to emphasize the foregoing: Female, seventeen years; no history; growth the size of a pea; microscopic examination papilloma. Ulceration; iodide of potash tried, negatively; alcohol used and later on tracheotomy; no glandular trouble; thyrotomy later on. Growth again removed and patient died four months afterwards from an epithelioma resulting within a year of the growth that was declared papillomatous a short time before.

While the microscope is undoubtedly a keystone to our arch of diagnosis, still lesions that have been regarded as malignant have retained benign clinical manifestations and have gone on to a successful change by regenerative processes. See "Roalde's Case," epithelioma tonsil.

The many major operations resorted to for the relief of this as well as other tumors of the larynx have hardly been touched upon, but suffice it to say that many of us realize that our regional limitations are marked and that we can delegate to the general surgeon conditions requiring more extensive surgical interference.

In conclusion, the writer feels some hesitation in offering this incomplete paper, but it is presented with a full recognition of its shortcomings. The subject is vast and the time allotment small, hence the argument for its imperfections. I will experience a sense of satisfaction, however, if my feeble efforts have directed your minds to some avenues of thought, and hope the coming year may bring us a better elaboration of pathology and treatment of laryngeal papillomata.

ON NASAL SUPPURATION.*

BY Z. L. LEONARD, M.D., NEW YORK.

The subject of nasal suppuration occupies too extensive a field to be comprised within the limits of a short paper, the following sketch will be, then, no more than a résumé of the work which has been accomplished, by the rhinologist, during a period of time extending back scarcely more than fifteen years.

Suppurative disease of the antrum of Highmore, the anterior ethmoidal cells, the frontal sinus, the posterior ethmoidal cells and the sphenoidal sinus occur in the relative frequency in which they are here enumerated. By far the larger number is confined to the antrum of Highmore, but as investigation along this line has advanced, it has been learned that many cases of suppuration occur in the other localities which have heretofore been overlooked from lack of accurate observation.

In 1886, Ziem laid down the rule that a general purulent rhinitis was not a proper diagnosis and that such a diagnosis should not be made unless a local cause could be found, or the accessory sinuses excluded. We shall confine our attention to the forms of chronic infection in which the presence of pus can be demonstrated by microscopical examination.

In a report by Howard, he discovered in eleven cases, the existence of the streptococcus pyogenes five times alone, four times with the staphylococcus pyogenes aureus, once with the bacillus mucosus capsulatus alone, and once with the diplococcus canceolatus and the bacillus mucosus capsulatus. He concludes by saying, "It is seen that acute and chronic inflammation of the accessory sinuses of the nose, are not caused by a single group of micro-organisms. It is, however, demonstrated that, with a few exceptions, inflammations of these cavities are caused by bacteria."

The infection usually originates in the locality in which it is discovered. It was Fränkel who first suggested that inflammatory processes of distant parts of the body might be the sources from which micro-organisms could reach the accessory sinuses by means of the blood. A suppurative condition of the cavities, in the opinion of all observers, is due, in by far the larger proportion of cases,

* Read before the January, 1901, Meeting of the Laryngological Section, New York Academy of Medicine.

to influenza, and the infective diseases, such as scarlet fever, measles, erysipelas, and the like. An acute condition after a shorter or a longer space of time becoming chronic; the diseased adjacent soft tissues affecting the underlying structure.

Our contention is that the majority of these cases show that the presence of carious bone is the result of the suppurative process and not, primarily, its cause, barring syphilis and tuberculosis. In other words, the inflammation has extended from the superficial to the deeper lying parts. The fact that polypi are often found in these diseased localities is not *prima facie* evidence, either, that the process has so far extended that there is bound to be carious bone. Clinical experience has proven, beyond a peradventure, that diseased bone may exist and yet there be no polypi. There may be extensive involvement likewise without excessive hypertrophy of the turbinals. An enlarged middle turbinal may be the seat of the suppuration and removal of this bone may cause a rapid amelioration of the symptoms requiring treatment for its relief.

The variation in the anatomy of these parts may be a source of the greatest perplexity to the surgeon. This is especially true in regard to the frontal sinus. The deviation from the normal anatomy of these regions has been a debatable ground to those who have devoted patient labor to their solution. Even yet, it may be regarded as somewhat of a *terra incognita* to all except those who have brought special talent and opportunity to bear upon the subject. To Zuckerkandl, belongs the credit of having beyond any one person, elucidated the intricate anatomy of the nose and its intra-mural sinuses. Lesser lights have appeared above the horizon whose investigations are worthy of praise.

The pathological processes have absorbed the attention of students likewise, in this country and abroad. Their efforts have been of the greatest service to the surgeon in his endeavor to accomplish a satisfactory result in the realm of operative interference. Doubtless thus far, no one has given to the profession, embodied in printed form, material of more importance and worthy of careful study than Grünwald. Although we may dissent from some of his conclusions, we are of necessity obliged to recognize in his work the labors of a careful and thorough student who has sedulously applied himself during these many years to the unravelling of what has heretofore been ignored or regarded as a perplexity, by those who would learn if they could. The result of his diligence, consequently lessens the efforts of those who may follow in his footsteps to throw an additional light upon an obscurity penetrated rarely by some rays of

knowledge. We must refer often to this author if we desire to keep in the van of those who are content to let their scientific or practical wisdom be enclosed within narrow bounds. As to the dicta of this writer on the much disputed theories of "ozæna," its origin and cure, personally, we have no hesitation in accepting them as nearer the true solution than anything that has so far been advanced. We believe that the explanation concerning this condition will suffice to dispel many of the cloudy ideas long since maintained, but offering no hope of ultimate adjustment. Grünwald in a series of cases clearly proves, that a focal point of suppuration in some one of the accessory cavities, is the cause of this trouble and that when the local disease is cured, the crusts and attending symptoms also disappear. This we have proved to our own satisfaction, in the cases we have observed. If a careful examination be conducted, probing each accessible cavity, and eliminating one area after another, success will come to the surgeon and release to the patient.

With regard to his statement that, "polypi, in a majority of all cases, are almost as good as pathognomonic of empyema of the accessory cavities, or focal suppuration in the nasal passages," we should take with a lesser degree of confidence; however, further experience may lead to a change of opinion and an acceptance of the author's declaration. The fact remains, nevertheless, that painstaking investigation brings its own reward.

Approaching the practical side of the whole matter, which is an attempt to relieve or to cure the patient, it seems best to take up each cavity seriatim, beginning with the antrum of Highmore, which until comparatively recently, has been the objective point of most of the treatment adopted by the surgeon.

It is well, at this juncture to recall what Eckley has said: "The mucous membrane of the intra-mural sinuses may be characterized as weak, pale, flabby, detachable, poorly nourished and very liable to infection, just the opposite of the predominating physical traits of the mucous membrane of the parent cavity, the nasal fossæ." The subjective symptoms of antral suppuration are not constant, though a degree of pain may be present in all cases. Transillumination is regarded by some, notably by Grünwald, as of little importance. Chiari, in 100 cases, was able by rhinoscopic examination alone to make a correct diagnosis in antral disease in all but fourteen cases. In the hands of most authorities, however, transillumination has been the most efficacious method whereby to confirm a diagnosis. It is allowable to make an explanatory puncture through the inferior meatus for the detection of pus if transillumination and other methods

have failed. This was the means employed by Chiari, in the fourteen cases referred to above. The desideratum that free drainage must be secured ought to guide the surgeon in his choice of the manifold varieties of operation devised. Few would be content to treat every case, as does Gavel, by washing out the cavity through the ostium. There may be occasion when this treatment would be effective, but we fail to see that it could be applied successfully to all cases of chronic suppuration. Without entering into a discussion of the many plans, we should condemn that one of entering by the way of the meatus or alveolus singly as not likely to get good drainage. The operation of Robertson, opening both above and below, at the canine fossa and the inferior meatus, curetting granulations, is by far the better way. Daily the cavity may be washed thoroughly with some hope of ultimate recovery. Six months will not be too long a time for these openings to remain patent. Cases in which this method has been tried have been the most fortunate so far as permanent relief was concerned.

As to disease of the anterior ethmoidal cells, we should not premit the circumstance that until the exact study of Mackenzie and Wright, in this country, and of Hajek, our knowledge of the pathology of this locality was largely theoretical. The studies of these men dissipated the theory of Woakes, that all ethmoiditis was of the nature of necrosis. These parts may be approached safely with the curette and forceps and the unhealthy tissues cleared away. The use of the trephine or drill is not without danger even in expert hands. We may be obliged to remove the middle turbinal and other obstructions before any further procedure can be undertaken. The intimate association of these cells with the frontal sinus, oftentimes compels the operator to freely expose and break down intervening obstacles to a good drainage through the whole extent. The natural opening through this sinus, in most cases, is so difficult to find in the living subject that nothing short of the destruction of the entire barrier will accomplish the desired end. We must then make use of the method of Ogston-Luc or, preferably, that one devised by Lothrop. Of all we choose this as offering the best expectation of success and the least amount of disfiguration. Entering from below the whole floor may be cut away and the ethmoidal cells laid bare and the diseased portions removed. The entrance to the infundibulum is henceforth complete and permanent.

In the posterior ethmoidal cells and the sphenoidal sinus much more caution is to be observed. The cells may be opened with a strong curette and subsequent treatment by washing pursued. Con-

siderable difficulty may be met with in an advance upon the sphenoidal sinus though here patient probing will solve the problem. Myles advises the use of a small, sharp, fine currette passed in and then pulled outward which will tear away enough to gain good drainage. He adds: "I do not consider it safe to currette the upper and external walls of these sinuses. Careful scraping of the anterior wall and the floor often produces decidedly beneficial results."

In conclusion it is ever to be carried in thought that a diagnosis should be made by differentiation and exclusion; whenever this diagnosis has been made it must be the object of the surgeon to adopt the plan which seems the most judicious and the most likely to warrant success at the point involved: in operating to guard against rashness, but to be governed by a determinative boldness.

A CASE OF CONGENITAL WEB IN THE LARYNX.

BY ALBERT B. M'KEE, M.D., SAN FRANCISCO, CAL.

A child, aged seven years, was brought to the eye, ear and throat clinic of the Cooper Medical College recently, with the statement that she had been hoarse from birth, the unnatural character of the voice being noticed in her cry. The voice had a peculiar hoarse, breathy character and an examination of the larynx showed a pearly web extending from the anterior commissure to the junction of the anterior and middle thirds of the true vocal cords uniting their margins by a membrane which allowed of a considerable range of motion. The posterior margin of the web was concave and no sign of inflammatory trouble present.

OBSERVATIONS ON THE PATHOLOGY OF THE PHARYNGEAL TONSIL AND ON ITS OPERATIVE REMOVAL.*

BY H. GRADLE, M.D., CHICAGO, ILL.

The diseased pharyngeal tonsil is of such importance that I do not hesitate to come before you with even mere fragmentary and disjointed observations as long as I may consider them additions to our knowledge. I will refer, in the first place, to the etiology of enlargement of the pharyngeal tonsil. This can be studied only when the morbid process is observed during its active period. As often as I have had opportunity to watch the beginning of adenoid growths it has always been the same history. A child, which has hitherto had normal nasal breathing, acquires an acute coryza with much nasal obstruction. After the inflammatory symptoms, and especially the discharge have ceased the obstruction persists and the diagnosis of enlarged pharyngeal tonsil can be made. Hypertrophy of the adenoid tissue is therefore the sequel of inflammation of the nasal lining. This takes place usually early in life, before the completion of the third year. On the basis of my own observation, I should expect a child, which has no enlarged pharyngeal tonsil at five years of age, to remain exempt for the rest of its life. The first attack of coryza, however, does not necessarily lead to great enlargement. But with every successive inflammatory attack the tonsil continues to grow. This intermittent growth may continue until nearly the age of puberty. Whenever children older than five years have been brought to me with the statement that their nasal obstruction was of recent origin, I could always learn, when intelligent answers could be obtained, that there had been some slight disturbance since the first years of life, even though the more distressing symptoms were of recent date. The factors usually quoted in the etiology of adenoids, viz., climate and weather, are of significance only inasmuch as they favor the occurrence of nasal inflammation. Why coryza causes permanent enlargement of adenoid tissue in some and not in others cannot yet be answered. The predisposition is often inherited. It is sometimes strikingly present in many members of a family. The predisposition is often related in some way to scrofula, for scrofulous children are rarely free from more or less adenoid

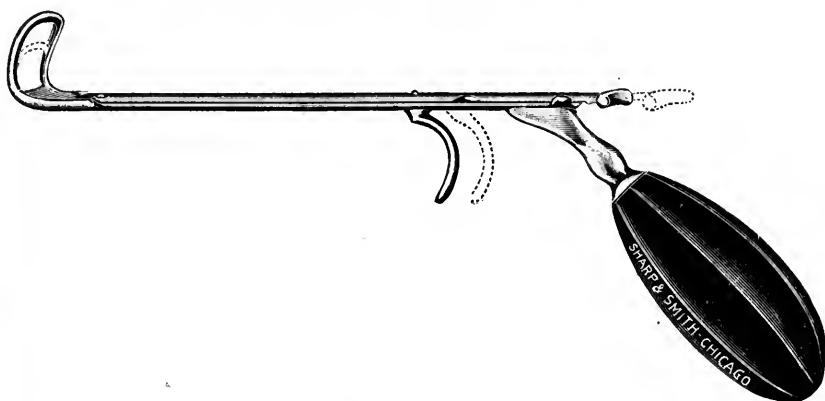
* Presented at the meeting of the American Laryngological, Rhinological and Otological Society (Middle Section) Chicago, Dec. 29, 1900.

hypertrophy. But on the basis of many microscopic investigations, published by numerous authors, it can be definitely asserted that the enlargement is not due to the presence of the tubercle bacillus. Although a small number of enlarged tonsils—on an average about five per cent—do contain tubercles, this is a secondary invasion found by Lewin (*Arch. f. Laryngologie*, Bd. ix, p. 377) about as often in the non-hypertrophied as in the enlarged adenoid tissue.

It is possible, and of some importance, to distinguish between hypertrophy of the pharyngeal tonsil and sub-acute inflammation of the enlarged adenoid tissue. In the former condition no inflammatory symptoms are present. When seen in the mirror the tonsil appears pale. There is no secretion and no variable turgescence of either the pharyngeal or the nasal mucous membrane. During such a period of quiescence, which often occurs during the warm season, the only symptoms are those due to mechanical obstruction, and their degree is determined by the ratio of the enlargement to the capacity of the naso-pharynx. All symptoms become more pronounced, however, and new complications arise when the enlarged adenoid tissue becomes the seat of sub-acute inflammation. When now seen during life or examined after excision, the growth is found to be more vascular and in a state of soft inflammatory swelling. There is some secretion, varying from thick, turbid mucous, to greenish pus, but there need not be and often is no acute coryza with it. It is, however, the inflammatory condition of the enlarged tonsil which makes it particularly dangerous, especially to the ear. I am inclined to doubt, from my own observations, whether catarrh of the Eustachian tube is ever started by the non-inflamed adenoids. I am quite positive that suppurative otitis, as well as secondary bronchitis, occur only in consequence of pharyngeal inflammation. It is not the mere presence of the enlarged lymphatic tissue which determines extension of the inflammatory process to the ears and to the bronchial tubes, but the presence of the adenoid hypertrophy renders the mucous membrane of the upper pharynx liable to take on inflammatory action at intervals and this inflammatory process may then extend.

My remarks on treatment will be confined mainly to the endorsement of an instrument. It is the adenotome devised by Schuetz, which I have modified in size and construction, and especially in the form of the handle. The latter is quite important, as it determines to some extent the efficacy of the instrument. The guillotine is made of such size and curve as to fit closely every pharynx beyond about the fourth year of life. For younger children I have a some-

what smaller model. The curved guillotine is not difficult to introduce, even though enlarged faucial tonsils may seem to present a formidable obstacle. The form of the handle enables one to press the instrument firmly upward and backward. This firm pressure guarantees removal of the entire tonsil in one piece. In proof of this statement I will pass around some specimens.



Gradle's Adenotome.

In presenting this instrument, I am not satisfied to assign it a modest place in the cabinet of the operator, but I wish it to replace every other form hitherto used. I have done the operation altogether over 900 times, and about sixty of these operations have now been made with the guillotine. On the basis of this experience, I can say emphatically that the adenotome will in every instance remove the entire tonsil in one sweep with less pain and, on the average, less hemorrhage than any other instrument. It is only when a timid operator does not press sufficiently that any adenoid tissue is left. The hemorrhage is just as sharp in some instances as with any other mode of operating, but it does not last as long. In the course of my experience I have had six instances of bleeding which proved troublesome, but not alarming. In every case I could satisfy myself that the bleeding was due to the incomplete detachment of small tags of adenoid tissue. Indeed, I learned that the best method of stopping the bleeding was to search at once for these remnants with cutting forceps or snare. This occurrence, and the hemorrhage dependent upon it, is impossible when the guillotine is used. The clean cut which it causes bleeds less persistently than the irregular wound made by cutting forceps or curette. Complete removal, possible invariably by the adenotome, can sometimes be accomplished by the Gottstein knife, but only when the adenoids are soft. All other methods remove the tonsil in fragments.

The quick action of the adenotome, and hence the relatively lessened pain, have settled in my mind effectually the question of narcosis in the removal of adenoids. Anyone who has seen the adenotome satisfactorily used cannot but decide that in the average case the discomforts and the psychic shock of anesthesia far outweigh those of the operation. Of greater weight, of course, is the question of danger. The great mortality of anesthesia in children with adenoids has been shown by Hinkel, who collected eighteen cases of death from English and American sources between the years 1892 and 1898. A further warning was sounded by Myles at the last meeting of the American Laryngological Society, by calling attention to the frequency of fatalities which are not published. In view of this danger I have no hesitation in condemning anesthesia as unjustifiable, except in the case of children which cannot be managed by gentleness or when the faucial tonsils require operation at the same time.

I wish now to call your attention to another subject, namely, the acute inflammation of the pharyngeal tonsil. This has been very little mentioned in literature. It is described as such in the article by Kayser in Heyman's "Handbuch d. Laryngologie," etc., but in such an indefinite manner as if he depended on other sources. The disease is certainly not common as compared with inflammation of the faucial tonsils. I have seen it five times. It probably comes to the notice of the general practitioner oftener, but just as likely as not is not recognized.

It begins with acute fever, but without the sudden onset characteristic of ordinary tonsillitis. Unlike the latter, the fever drags on one or two weeks. My patients were all children, and none of them were very sick after the first two days. The only throat symptom noticeable is frequent swallowing of viscid secretion. There was no pain. Characteristic was the nasal obstruction which developed in the course of the first day. Two of the children had previously had no nasal obstruction whatsoever. Three of them had, presumably, insignificant adenoid enlargement. With the nasal obstruction there was absolutely no discharge from the nose. Within two days the characteristic adenoid habitus as regards open mouth, thick nasal speech and nocturnal restlessness had developed. Exploration with the finger gave the characteristic obstruction of the pharynx. The only other possible diagnosis, namely, that of retro-pharyngeal abscess, was excluded by the limitation of the swelling to the pharyngeal tonsil and the gradual recession of the symptoms without the sudden change obtained by the breaking of an abscess. In two of the children the swollen tonsil receded to absolutely normal size. One of them, however, had a recurrence the following year, again with the same complete recovery. The three others retained sufficient enlargement to cause some annoyance. One of them I operated before the inflammatory condition had entirely subsided. Otherwise I did not attempt any active therapeutics. In the case of the recurrence, I brushed the enlarged tonsil with Löffler's solution, apparently with the result of materially hastening recovery.

RESORCIN AS A PRESERVATIVE FOR SUPRARENAL EXTRACT SOLUTION.*

BY SEYMOUR OPPENHEIMER, M.D., NEW YORK CITY.

Instructor in Laryngology, University Medical College, Fellow of the American Laryngological Society, Etc., Etc.

The most serious difficulty in obtaining a satisfactory aqueous extract of the suprarenal gland, has been the necessity of making a solution that would not decompose and cause infection when applied. Since the drug has come into general use numerous formulæ have been recommended in which a preservative is added to prevent putrefactive changes. Of the many drugs used for this purpose boracic acid, camphor, glycerine, bichlorid of mercury, the various silver salts and alcohol have received the most attention. Boiling the aqueous solution has to some extent also been advised for this purpose, but this method falls far short of its aim, as it only insures that the solution remains sterile for a very short time.

Boracic acid will undoubtedly preserve the active portion of the gland for several weeks and the same can be said of glycerine and weak alcohol solution, but the addition of these substances to the suprarenal extract materially weakens its physiological effect. Camphor or any preservative with a distinctive odor should never be used for this purpose, as it is practically impossible to detect changes in the solution until they become apparent to the eye on account of the powerful odor of the preservative masking the odor of decomposition.

I have found that the metallic preservatives as silver and mercury, whether in organic combinations or not, produce a precipitate in conjunction with the suprarenal, making the solution practically worthless, as it diminishes the vaso-motor constrictor action and within a short time the solution becomes to a great extent inert.

Two important objects are essential to the production of a solution of the suprarenal capsule that will be physiologically active and produce its maximum vaso constrictor action when locally applied to the mucous membrane. Firstly, the prevention of putrefactive changes which result on account of the large proportion of animal matter present in the dessicated powder, and secondly, the preservative used must be non-toxic and must not impair in any way the full efficiency of the gland.

* Read before the Metropolitan Medical Society, December 18, 1900..

These requirements, in my experience, are all fulfilled by the addition of resorcin, which, while retaining its preservative qualities, is not in the strength here used, an irritant to the mucous membrane and is not like the majority of drugs, incompatible, thus impairing the value of the suprarenal.

A series of experiments to determine the usefulness of this drug for the purpose mentioned, were undertaken on guinea pigs. A one per cent solution of resorcin in sterile water was prepared to which the dessicated gland was added in the proportion of sixty grains to the ounce and one cubic centimeter of the filtrate was injected into the peritoneal cavity of guinea pigs at various times and covering a period of several months. In every instance it was found to be non-infectious, the animals showing no evidence local or otherwise of any septic effects from the inoculations.

A series of clinical tests were then undertaken by applying the solution when filtered to the nasal mucosa and it was found in every instance that there ensued prompt contraction of the vascular walls, differing in no way from that produced by the fresh aqueous solution of the gland. This maximum energy was not diminished by age, as the active physiological results were obtained and were as well marked in the fresh solution as in that used at the expiration of six months after it had been first prepared. At the same time the solutions showed no evidence of bacterial change, remaining perfectly sterile for an indefinite period. By the use of a one per cent aqueous solution of resorcin, therefore, an almost permanent solution can be obtained, thus eliminating the annoyance of having to prepare a fresh solution whenever the drug is applied.

For practical purposes it is my habit to add sixty grains of Armour's dessicated suprarenal extract to one ounce of the resorcin solution. The quantity necessary for daily use is filtrated thus obtaining a clear aqueous solution. It is not my desire here to mention the numerous uses to which the suprarenal gland may be applied, but as a hemostatic and vaso-motor constrictor, this solution can be recommended to you as being of great service.

706 Madison Avenue.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, January 23, 1901.

W. K. SIMPSON, M.D., Chairman.

A Large Rhinolith.

DR. M. D. LEDERMAN presented a specimen taken from a woman, forty-six years of age, who had presented herself to him on January 16th with an obstruction of the nose, and complaining of asthma, sneezing, headaches and pains radiating through the right side of the face, together with difficulty in hearing. This was the side of the nose which was obstructed. Examination had revealed a very large mass near the right nostril, and occluding the inferior meatus, and extending up into the tissues of the middle turbinal bone and some distance to the outer side. The probe showed a calcareous mass, and further investigation proved this to be a rhinolith weighing about 65 grains. The nucleus was a cherry stone, which had probably been there since childhood. He had found it necessary to use the mastoid rougeur forceps in order to break it up and remove it. The removal of these foreign bodies was apt to set up considerable bleeding, but this could be readily checked, as in the present case, by the insufflation of powdered suprarenal extract. The sneezing and other symptoms had been greatly improved by the operation. There was a polypoid change also on both sides.

Clinical Cases.

DR. FRANCIS J. QUINLAN presented, through the courtesy of Dr. Hughes, of the City Hospital, two cases. The first case was one of gumma, occurring in a young man who had had his primary lesion about six months ago. Dr. Mayer had suggested the possibility of this being a lupus, but there had been a very rapid breaking down of the post-pharyngeal wall with extensive involvement of the periosteum. It had extended upward also, attacking the soft palate. The man had been taking mixed treatment for six weeks, and had not as yet responded well to it.

Suspected Aneurism of the Aortic Arch.

The other case was that of a man who, two and a half years ago, had had the ordinary cadaveric condition of the vocal cords, with brassy cough and sighing respiration. Several of the visiting staff of the City Hospital had been requested to examine the case carefully, and they had reported that the examination of the chest was negative. Dr. Draper some time ago, however, thought he had detected a thrill and evidence of aneurism. At the present time the physical signs of aneurism were more marked, and the man's shortness of breath had increased, and the pains in the chest had become more intense.

DR. QUINLAN also presented a man who had been referred to him from Bellevue. The left arytenoid cartilage presented an appearance usually found in epithelioma, and the case was suspiciously like one of malignant disease, probably epithelioma of the post wall. The man would be treated however with anti-syphilitic remedies, and a subsequent report made of the case.

Excision of the Superior Maxilla for Malignant Disease.

DR. QUINLAN said that last October he had presented a so-called sarcoma that had been removed by Dr. Bessell at Bellevue. At that time the entire superior maxilla had been taken away. He had been treated for a long time with iodide with apparent aggravation of his condition. Donovan's solution had been used both locally and internally since then, and under its use there had been a slow but steady decrease in the accessory tumors which at the time of operation and since was very well marked, but at present scarcely an evidence was visible of these involvements.

DR. EMIL MAVER said that the picture of woe which this man presented after having been under anti-syphilitic treatment for so long a time made it very doubtful as to this being specific disease. Owing to the comparatively short time that had elapsed since the initial lesion he would suggest a course of mercurial inunctions, and having swabs taken from the throat and examined for tubercle bacilli. As to the case of ulcer over the arytenoid everything would depend upon the results of the subsequent examination. One could hardly be guided by the presence or absence of glands because it was notorious that intralaryngeal growths do not show much adenitis, especially in the early stages. The last case was worthy of special study because of the excellent result. He had come to the conclusion before seeing this case that he would hereafter advise a let-alone policy for all such cases.

DR. W. FREUDENTHAL said, regarding the first case that he felt quite sure that the man was suffering from specific disease. About three months ago an almost identical case had come to him, a woman about thirty years of age, who was so weak from being unable to take food that she had to be carried into his office. In this case, as in all other painful ulcerations, he had employed his emulsion of orthoform. The application had been made with great difficulty, but she had been able after it to take the first good meal for some time. She had finally recovered perfectly under iodide of potassium. He could not too earnestly recommend the use of pure orthoform, or of his emulsion, in all such cases of painful ulceration.

DR. M. D. LEDERMAN referred to a woman of thirty-six, who had come under his care complaining of dysphagia. Examination had shown a gumma at the base of the tongue. Hypodermic injections of $\frac{1}{6}$ of a grain of the bichloride of mercury had been given daily, and in ten days the improvement had been very marked. She had received altogether thirty-two injections, and no abscess had occurred, but in one instance in which the injection had been exposed to pressure from the corset, there had been a little irritation. He would also speak very favorably of the local use of the old black wash in these cases, in fifty per cent strength. The last case presented reminded him of a case that he had shown to this section some years ago, that of a young man of twenty-six with a small round cell sarcoma. All of the upper jaw and a part of the sphenoid had been removed by Dr. Dawbarn, and the man was alive and well to-day.

As a preliminary measure both external carotid arteries were ligated, thus cutting off the blood supply of the growth and neighboring tissues, and resulting in a marked diminution in the size of the growth before the radical operation was attempted. When last seen the patient wore an artificial jaw and obturator, which gave him considerable comfort and caused no annoyance.

The toxins of erysipelas and prodigiosus had been used in this case with unpleasant consequences.

DR. JONATHAN WRIGHT said that it did not seem to him possible that a carcinoma of the larynx in that situation could have produced that amount of ulceration in two months, for, this kind of ulceration was slow, unlike the fungous growth of carcinoma. The criticism made by Dr. Mayer about the glands he thought would not apply to this case because it was situated high up where the lymphatics were quite abundant, and with so much ulceration in a malignant growth the glands would very probably be involved. The result in the case

of tumor of the jaw would point to the diagnosis of sarcoma. Such cases furnish many surprises. The effect obtained from the arsenic also tended to confirm that diagnosis.

DR. T. R. CHAMBERS said that the result obtained in this case of tumor of the jaw was a remarkably successful one; possibly this had been partly due to the age of the man—about forty-five. Regarding orthoform, he would say that he had been called to a man in great agony from laryngitis. An application had been made of ten grains to the ounce of nitrate of silver solution previously by a fellow practitioner. Dr. Chambers said he had used orthoform in this case, and the man had been in an ecstasy of delight within ten minutes. He considered orthoform a most wonderful remedy when applied to the larynx to relieve pain.

DR. W. K. SIMPSON said that these growths that had been presented certainly tested one's powers of diagnosis to the utmost. From the gross appearance of the laryngeal growth, and its position, he would judge that it was of a malignant nature. There was a peculiar hardness of the ulcerating surface in this epitheliomatous growth which was of much diagnostic significance. The growth was practically an extralaryngeal one, and he would insist upon this diagnosis even though there were no enlargement of the glands at the present time.

DR. QUINLAN said yesterday Dr. Walsh of the St. Vincent's Hospital had done a tracheotomy on the case of a fungating tumor that had been presented recently to this section. In two weeks this mass had covered the entire epiglottis, and yet there had been absolutely no glandular enlargement. The first report of the pathologist in the excision of the sub-maxillary case now under discussion was that it was a sarcoma. Subsequently sections had been submitted to other pathologists, and they had all reported it to be epitheliomatous. In the first case exhibited, that of the boy, the soft palate had presented almost a condylomatous appearance. There was now no elevation of temperature, and no tubercle bacilli could be found. He had been using a watery solution of ten per cent of orthoform, and had found that it could be applied to the recesses of these ulcerations, and that it answered very well in relieving local pain.

Nasal Suppuration.

DR. Z. L. LEONARD said that by far the larger number of cases of nasal suppuration were confined to the antrum of Highmore. In 1886 the rule had been laid down, that general purulent rhinitis was not a sufficiently exact diagnosis. In a report by Howard he had discovered staphylococci in eleven cases, sometimes alone, and sometimes mixed with other micro-organisms. With few exceptions inflammation of these cavities was caused by bacteria. Influenza, scarlet fever, measles and erysipelas were the diseases which most commonly gave rise to suppuration of the accessory sinuses. According to his experience, in the majority of cases the inflammation extended from the superficial to the deeper parts, and carious bone was present. Diseased bone might be present without any polypi. Deviations from the normal anatomy of the frontal sinus were a source of much perplexity to the surgeon. To Zuckerkandl belonged the credit of having done more than any other towards elucidating this subject. Transillumination was looked upon by Grünwald as of but little importance, but in the hands of most authorities it had proved to be a very valuable diagnostic aid. Few would be content to treat every case by merely washing out the ostium. He condemned the method of entering the alveolus simply as one not likely to secure good drainage. Six months would not be too long a time for these openings to remain open. Our knowledge of the pathology of the anterior ethmoid cells had been greatly enlarged by Wright and others. The intimate association of these cells with the frontal sinus oftentimes compelled one to break down the entire barrier. Entering from below the whole floor could be cut away. In the posterior ethmoid cells and in the ethmoidal sinus much more caution was necessary. Myles advised the use of a small sharp fine curette passed in and pulled out of the sphenoidal sinus.

DR. M. D. LEDERMAN said that about two weeks ago he had listened to an interesting paper and seen a demonstration by slides of the relation of the antral, ethmoidal and sphenoidal sinuses by Dr. Cryer, of Philadelphia. A number of cases had been shown in which the frontal sinus led directly into the antrum. The author had stated that in a number of cases in private practice he had cured the case by curetting and drilling through the antrum directly into the sinus. A number of slides had been shown from cases in which the sphenoid had come remarkably far forward, reaching nearly to the upper wall of the antrum. It was claimed that in many cases the

antrum should not be opened in the mouth because of the infection which was unavoidable in a certain proportion of cases. Where the floor of the sinus was lower than the nose, the opening should be made either through the socket or the canine fossa, but such cases were remarkably few according to Dr. Cryer.

DR. JONATHAN WRIGHT referred to a hospital case in which there had been an absence of the frontal sinus. He thought that probably the absence of the frontal sinus might have been a predisposing cause of the ethmoiditis.

DR. QUINLAN said that he had exhibited to the section a man who had been operated upon for bilateral frontal sinus disease nearly one year ago. An old infection had followed in this case very similar to the one described by Dr. Wright. Cases of anterior rhinitis of a purulent type should always be examined very carefully. The whole question of suppuration of the nasal fossa was one of drainage. The removal of the apex of this triangle at once secures drainage and ventilation that could be obtained in no other way. He was cautious about entering the frontal and sphenoidal sinuses, yet these cases recovered simply by restoring the patency of the middle meatus. He thought too much attention had been given to the importance of the antrum in suppurative disease of the nares; in his experience it had been the exception to find it the seat of purulent inflammation. About the middle of last July he had smoothed down an ordinary spur of the septum, and had then found a polypoid degeneration, and back of this a collection of pus. A bacteriological examination had shown this secretion to contain staphylococci. A few days later after violently blowing the nose a middle ear catarrh had developed, and this had been followed by mastoid symptoms within a week. The mastoid operation had been followed by various metastases in the leg, and the man had since been confined to bed and had been subjected to upwards of a dozen surgical operations.

DR. MAYER commended the last speaker for having made this confession, yet he should remember that we were not responsible for existing conditions, and the tendency to multiple abscesses in this patient was one for which no one could be held. A search through the literature would show that disease of the maxillary antrum greatly exceeds the number of cases of disease of the other sinuses. The aphorism that no skull was any thicker than its thinnest part should always be borne in mind, and he would no more think of opening the frontal sinus with a trephine than he would think of

using this instrument for the extraction of a tooth, the chisel and hammer being all sufficient. To his mind, the only thing to do was to open the frontal sinus externally. This would result in almost no disfigurement. He agreed with the reader of the paper that the operation through the canine fossa and through the floor of the nose was the one indicated, but sometimes a bony plate would be found running through the antrum of Highmore so dense that it could not be reached either through the nose or through the opening in the canine fossa. A case of this kind that he had seen had been under the care of many physicians, some of them specialists. The chief symptom had been described by the patient as a "pulling sensation" downward, and examination had shown a point of tenderness over the antrum on deep pressure and a well-marked dark spot shown on transillumination. The antrum had been opened and much pus evacuated, but it was impossible to make the opening in the nasal floor because of this bony plate. The length of time the drainage tube should remain in depended chiefly upon the chronicity of the case.

DR. THOMAS J. HARRIS said that he felt that he had been too radical in his operative work in this field, and believed, with Dr. Myles, that in treating an antrum one should go just as far away from general surgical principles as possible. He believed, with Dr. Quinlan, that most rhinologists were too anxious to do operative work in this class of cases. If suppuration did not cease promptly, the present tendency was to insist upon laying open and curetting the antrum. This procedure was often followed by very prolonged suppuration. With a chisel and mallet, he thought, the frontal sinus could be opened much more safely than with the trephine, and the operator should always be on the watch for absence of the frontal sinus.

DR. MAX TOEPLITZ said that it was his practice to make exploratory puncture before making the diagnosis of empyema of the antrum. He agreed with what had been said by the last speaker regarding the treatment. It was often asserted that nasal suppuration in children was very frequent, yet in his rather large experience such cases had been quite uncommon. Bosworth claimed that nasal suppuration was the cause of atrophic rhinitis, and Cobb had made the statement that it was a cause of cervical adenitis, which could hardly be the case if it were so rare.

DR. E. L. MEIERHOF said that any one who had seen Jansen, of Berlin, operate on the anterior wall of the antrum of Highmore must

have wondered how these cases could get well unless the enormous granulation masses were removed; nevertheless, from the "Transactions of the German Otological Society of 1900," it was evident that Jansen did not have many supporters for his operation. He would like to call attention to the great value of quinine when nasal suppuration had existed for a long time. The dose should be two or three grains, three times daily, continued for two or three weeks. He had followed this as a routine measure without any other treatment in many cases with excellent results.

DR. J. E. NEWCOMB said that he had seen a number of cases apparently suffering from atrophic rhinitis, yet after a certain amount of treatment, one side had cleared up, leaving crusts on the other side. In several such cases, even after careful probing, he had not detected dead bone, though he had occasionally felt bare bone. He would like to hear from others on this class of cases.

DR. LEDERMAN referred to a case of alarming hemorrhage occurring during an operation in the sphenoidal region by one of his confreres. The hemorrhage had been controlled by plugging the artificial opening, but probably would have resulted seriously if assistance had not been at hand, as the blood poured from both sides of the nose and naso-pharynx. The surgical treatment was being carried out under cocaine anesthesia at one of the clinics, and the patient was immediately placed in bed. The bleeding probably came from a wound in the cavernous sinus. Fortunately no unpleasant after effects were noticed.

DR. W. K. SIMPSON said that the matter of exact diagnosis was sometimes exceedingly difficult, both as regards the existence of purulent secretion and the isolation of the sinus. He had been led to think that transillumination was positive in its results. If both sides of the superior maxilla were well illuminated by this method there could not be any great collection of pus or any great thickening of the antrum or of the frontal sinus. He had examined a number of skulls with reference to the frontal sinus, and had found that practically no two frontal sinuses are alike.

DR. T. CORWIN, of Newark, said that he had studied the work of Grünwald very carefully, and had been impressed with his insistence upon the use of the probe and the detection with it of dead bone. This author seemed to consider it as established that atrophic rhinitis and the accompanying discharge depend upon a necrotic focus. The speaker said that his own use of the probe had ordinarily been barren of result.

DR. GEORGE B. MCAULIFFE asked whether transillumination in an antrum containing septa would not yield an unsatisfactory result. In the present discussion very little attention seemed to have been paid to the aseptic treatment of the nose. A general surgeon would not usually operate unless the coincident inflammation had been mitigated. The common practice of leaving the lymphatics open for septic infection he believed was the cause of most of the sequelæ observed.

DR. W. K. SIMPSON said that a very thick wall or a small cavity would not admit of transillumination. Possibly the presence of multiple septa would also interfere. He did not believe that it was possible to get a thorough transillumination if an abnormal condition was present.

DR. LEONARD closed the discussion. With regard to the relative frequency of location of the disease, he said that a search through the literature for a number of years past had revealed only one article in which the ethmoidal cells were spoken of as more frequently involved than the antrum of Highmore. He did not believe that every case of suspected nasal disease should be subjected to a severe surgical operation. Oftentimes the removal of an enlarged middle turbinate would relieve the suppuration altogether, thus emphasizing the necessity for conservatism. He would not himself use the trephine, because he had known of cases in which its employment had led to an alarming hemorrhage. He was of the opinion that more dependence could be placed upon the probe, as a means of diagnosis, than anything else, but it could only be employed successfully after the acquirement of the *tactus eruditus*.

LARYNGOLOGICAL SOCIETY OF LONDON.

ORDINARY MEETING, DECEMBER 7, 1900.

F. DE HAVILLAND HALL, M.D., President, in the Chair.

The Treatment of Nasal Polypus.

DR. LAMBERT LACK said:

Mr. President and Gentlemen—I deeply appreciate the high honor conferred on me by the council in inviting me to open the discussion on this important subject. Many members will no doubt have interesting remarks to make, and therefore I shall detain you as short a time as possible while I briefly enumerate the results of my own investigations, and leave the discussion to others.

The rational treatment of polypus must depend upon the view we take of its pathology. This subject was fully discussed at the meeting of the British Medical Association in London in 1895, when the general opinion seemed to be that polypi were in some way the products of inflammation, but both Woakes' theory of "necrosing ethmoiditis" and Grünwald's of sinus suppuration were considered disproved or inadequate, and in fact the discussion only showed the truth of Mackenzie's statement that the cause of polypus was still unknown.

The theory I wish to maintain is that the ordinary nasal polypus is essentially a *simple localised patch of edematous mucous membrane*, and that this edema is a result of disease in the underlying bone.

The first point is proved by both clinical and microscopical examinations. Histologically polypi consists of loose fibrous tissue, the meshes of which are filled by serous fluid. The growth contains vessels and glands, and is covered by the normal epithelium of the part. The glands are more numerous near the attachment of the growth, and vary in number in different polypi, sometimes, particularly in chronic cases, being very numerous. In addition to this there are signs of inflammation, the vessel walls are enlarged and thickened, and there are scattered collections of round-cells, especially marked around the vessels and glands. The glands are sometimes healthy, sometimes undergoing degeneration. The acini may be dilated from obstruction of the ducts due to pressure of the inflammatory exudation, and the cysts commonly seen in polypi are thus derived. Thus it is seen that polypi contain all the structures

of the normal mucous membrane *plus* a certain amount of inflammatory exudation, cerum and round-cells; and further, a polypus passes gradually and imperceptibly at its edge into the normal mucous membrane.

It is obvious that growths containing such diverse and highly differentiated structures are neither tumors nor granulations. The latter in the nose, as elsewhere, consist of round-cells, spindle-cells, young vessels, and the early stages of fibrous tissue. Moreover, as seen after intra-nasal operations, or when produced by the irritation of a foreign body, a sequestrum, etc., they are quite different from polypi. Again, clinically there is every stage between edema of the mucous membrane and polypus—a slight edema, a marked localized edema, a broadly sessile polypus, and a typical pedunculated polypus. It is purely a question of degree, a small diffuse, non-movable mass being usually described as edema, whilst a larger, more sharply defined, more movable growth is considered a polypus. Also the microscopic structure of the two is identical. Grünwald asserted that by tightly packing an antrum edema of the lower lip of the ostium maxillare could be produced, and that this edematous tissue had the microscopical characters of a polypus.

The second point, that polypi are due to disease of the underlying bone, was first, I believe, definitely asserted by Woakes; but his views have obtained very little credence. However much exception may be taken to Woakes's own work and investigations, it seems to me his theory of bone disease is the most adequate explanation hitherto offered of polypi, and especially of their tendency to recur, and further that the independent evidence of Thurston and Martin, based upon microscopic examination, ought not to be lightly overlooked.

More than two years ago, when I took up this work, I collected pieces of bone from over thirty cases of nasal polypi and prepared them for microscopical examination. In every case bone changes were found of the nature of a rarefying osteitis. Briefly, the sections showed that the process commences as a proliferation of the cells in the deeper layer of the periosteum. In places numerous large cells or osteoclasts appear in contact with the bone, and gradually eat it away, forming irregular little bays along its edge. At the same time the bone cells themselves enlarge and become more numerous, and give the bone a more cellular appearance. As this process of rarefying osteitis extends the bone ultimately becomes disintegrated, and the fragments, surrounded on all sides by osteoclasts, are slowly eaten away and absorbed. No true necrosis was

seen. The appearances were found in both extensive and simple cases of polypi. Thus the pathological evidence supporting that of Thurston and Martin is fairly complete, in spite of some few contrary observations of Zuckerkandl, Luc, etc.

Since this paper was written these observations have been confirmed by Cordes (*Archiv. für Rhin. und Laryng.* of last month), who has described some investigations with almost identical results, except that he did not always find bone changes in mild cases of polypi.

The following are some of the clinical signs of bone disease:

(1) Digital examination under general anesthesia. If the finger be passed carefully up into the ethmoidal region in cases in which no operation has ever been performed, it often impinges on soft jelly-like tissue in which spicules and loose pieces of bone can be plainly felt, although it is very rare to feel rough bare bone.

(2) The probe may be used in a similar way, but it is obviously much less reliable. Very great care must be taken in employing it and in drawing deductions from its use. A blunt ended probe and one which can be easily bent to pass in any direction must be used, and even then it is difficult to avoid perforating the softened mucous membrane. The ease, however, with which this is done, and the feeling of bare bone obtained, is quite different from the normal condition.

(3) In a severe case of polypus in which no operative interference has ever been attempted, if the polypi be carefully removed with the snare without touching the bone in any way, it is sometimes possible to observe that the entire middle turbinate has disappeared, and its place has been filled up by masses of small polypoid-looking growths.

(4) The results of operations as regards recurrence when the diseased bone is completely removed. This further proves that the bone disease is the cause of the polypi, and not *vice versa*, as some have stated.

The probable history of a case of polypus is as follows:

In an acute inflammation of the ethmoidal region, and especially in the severer and more lasting forms of it occurring in connection with the exanthemata, erysipelas, influenza, and septic affections, such as sinus suppurations, it is probable that the periosteum covered only by the thin mucous membrane, and even the bone may be involved. In such cases the middle turbinate is especially liable to be affected, and on examination this structure appears large and rounded, and covered by a thickened edematous mucous membrane.

Microscopical examination of such a middle turbinate shows the early stage of the rarefying osteitis above described, and the overlying edematous mucous membrane has all the microscopical characters of a typical nasal polypus.

As the disease slowly progresses the bone becomes disintegrated and at the same time expanded, and the cell commonly present in its anterior end may become distended and form a bony cyst.

The osteitis spreads to the neighboring parts until the whole ethmoid may become affected. The outlines of the bone are lost, the middle turbinate can be no longer recognized, but loose pieces of bone, polypi, edematous granulations, and gelatinous mucous membrane fill the whole upper part of the nose. In this extremely slow but progressive process the bone is slowly but surely eroded and absorbed. In some cases the disease is ultimately arrested, and then the bone becomes very dense and sclerosed. Such a condition is found in cases in which only a single polypus or perhaps two polypi are present, and in these cases, as is well known, recurrence of the growth after removal is rare.

As just said, the edematous mucous membrane overlying the affected bone in the early stage is indistinguishable microscopically from a polypus, and clinically the two conditions pass from one to the other by imperceptible stages, and can only be artificially divided. Moreover edematous infiltration in these parts is apt to become large and bulging, as the mucous membrane is extremely loosely attached and easily thrown into folds. After a time these swellings, well supplied with nourishment, apparently take on a more or less independent growth; the increase in size is doubtless assisted by the dependent position of the growths and the action of gravity. Their tendency to become pedunculated is also partly due to the action of gravity, and partly, perhaps, to the effect of blowing the nose, which would tend to make the growth swing about. These considerations explain the chief facts in the clinical features of polypi, their liability to recur after simple removal, the fact that they grow only from the ethmoidal region of the nose where the bone is covered by a thin muco-periosteum, and that they are more common on the middle turbinate and about the regions of the ostia of the accessory sinuses where the mucous membrane is excessively lax.

Treatment.—If this theory of the pathology of nasal polypus is accepted the whole question of treatment must be reconsidered, for it follows that our efforts must be directed towards the eradication of the bone disease and not simply towards the removal of the polypi, one of its effects.

For the sake of convenience the following four groups of cases may be taken:

(1) Cases in which one or two polypi only are present, which are of long standing, in which there is no sign of active disease still present, and in which it is probable that the initial bone disease has completely passed off. In such cases simple removal with the snare may be practiced. It is a matter of every-day experience that recurrence in such cases is rare.

(2) Simple cases of early bone disease, in which there is enlargement of the anterior end of the middle turbinate, with overlying edema of the mucous membrane, or the early stage of polypous formation. The affected part should be removed, and this generally resolves itself into a typical amputation of the anterior end or more of the middle turbinate.

(3) Cases in which a few polypi only are present, and in which there is apparently a very limited area of bone disease. These cases may also be treated with the snare, but an attempt should always be made to hitch the wire loop as high as possible round the base of the growth, so as to encircle the piece of bone from which it grows. After the polypi and as much bone as possible have been removed in this way, at a subsequent sitting the affected region should be thoroughly examined by probing and illumination, and all diseased bone and mucous membrane should be clipped away by Grünwald's forceps. The middle turbinate should be removed if diseased, or if necessary to give access to the affected region. In other cases it may be necessary to scrape away the affected part, and in such circumstances nitrous oxide anesthesia should be employed, and the operation performed with a ring-knife under good illumination.

The results of operation in these three groups of cases is almost invariably good, and the operation itself apparently in no way a serious one.

(4) In the cases of extensive bone disease in which there are many polypi involving an extensive part of the ethmoid a more radical procedure is necessary. In such cases simple removal of polypi is useless, as recurrence rapidly takes place, and I believe it is better in the first place to give a general anesthetic, and to remove not only the polypi but the whole of the affected part of the ethmoid bone.

This operation should also be practiced in cases in which recurrence has followed other operations for the removal of polypi, and cases associated with suppuration in the ethmoidal cells or in other

accessory sinuses. In the former case it is necessary to open the ethmoidal cells for the suppuration itself, and in the latter it is especially necessary to clear the approach to the ostium of the affected sinus.

The operation is performed as follows: The patient being anesthetised, the ethmoidal region is thoroughly examined by the finger, both through the nose and also through the post-nasal space, to determine as far as possible the extent of the disease. If the middle turbinate be present it may be removed by means of the spokeshave, and any large polypi should be removed by means of the forceps. Then the lateral mass of the ethmoid should be thoroughly scraped away by means of a large ring-knife, such as Meyer's original adenoid curette. This is the only effective instrument; sharp spoons are quite useless. In this way large masses of polypi, degenerated mucous membrane, and fragments of bone are removed. The finger is introduced from time to time to observe the progress, to feel for any spicules of bone and soft patches, and the scraping is continued until all friable tissue has been removed. Healthy parts of the ethmoid are easily distinguished by the finger and even by the curette, as they are smooth, firm, resistant, and give little hold to the knife. In some cases the operation is completed by a smaller ring-knife, but this must be employed with the greatest care. Of course great caution must be used when it is felt that the region of the cribriform plate is being reached, but the whole inner wall of the orbit may be scraped away with impunity.

The operation should be performed with the patient turned well over on to his side, and in cases where the posterior part of the ethmoid is unaffected a large sponge may be pushed up into the post-nasal space. Directly the operation is over hemorrhage is arrested by packing the nose with a strip of gauze soaked in glycerine-iodoform emulsion, and a piece of lint soaked in evaporating lotion is then applied to the face. This gauze packing should be changed every second or third day, and the nose irrigated. If it is easily tolerated it may be continued for a fortnight, in other cases it should be omitted earlier.

Results.—The large majority of cases run an afebrile course. In a few cases numerous granulations appear in the field of operation, and may even become exuberant. If the operation has been thoroughly performed these usually disappear spontaneously in a few weeks, and meantime the patient experiences no discomfort from their presence. After five to eight weeks a large dry cavity, lined by healthy adherent mucous membrane, will be seen in the upper part of the nose.

One would theoretically expect operation in such a region to be somewhat dangerous, but although I have operated now between fifty and sixty times, and others have also performed it, no symptoms causing real anxiety have yet been seen. Of ill results following the operation the following have been noted. A black eye is not uncommon, but usually subsides in three to four days, under cold applications. In one or two cases acute suppurative otitis occurred, but passed off under treatment. Such a result may follow any similar operation. In a few cases a considerable rise of temperature has occurred, but only in cases in which sinus suppuration has been present. Such cases have readily yielded when the packing has been omitted and nasal irrigation adopted.

In one case of extensive ethmoidal caries, with suppuration in the ethmoidal cells, and probably also in the frontal sinus, an orbital abscess accompanied by necrosis of a portion of the inner wall of the orbit followed some three weeks after the operation, and a week or ten days after the patient had left the hospital. This is not a very rare occurrence in cases of ethmoidal cell suppuration, but it may have been due to or hastened by the previous operation. The abscess was opened externally, a sequestrum removed, and a cure followed.

In no cases have any cerebral symptoms been noted, and no death has occurred. Even if the operation entail some danger there is some, and probable a greater risk in leaving the disease alone, or in employing the small nibbling operations which are commonly recommended. The risk of operating is probably greater in cases in which suppuration is present, but the necessity for it, and the danger of leaving the disease alone, is also greater. I am more fearful, if the operation is widely adopted, that it should fail to cure from want of being practiced with sufficient thoroughness, than that it should cause fatalities by being performed too boldly.

The results as regards recurrence, are very good. In all simple cases of polypi a cure has resulted, and this has been permanent for several years in some cases, in which snare operations had been repeatedly followed by recurrence. Such cases I have already shown here, and I hope at regular meetings to show more. In suppurative cases recurrence has been rare, and when it has occurred the disease has not been the intractable affection it was before operation. In such cases occasional removal with the snare will usually give immunity for months, until if the suppuration be cured the polypi no longer recur. In a few cases I have operated a second time, but in every case in which I have performed the first operation myself, the

bone has appeared quite firm and dense, and there has been practically nothing to remove.

The only alternative procedure—repeated small operations, such as nibbling away with forceps, so commonly advocated—may perhaps effect a cure in time, but it has many and great disadvantages. The operation is always painful, as cocaine acts by no means satisfactorily in these cases. Ten, twenty, and even more sittings are often required, as very little can be done at a time. This is extremely tedious and discouraging to the patient, and the constant pain and dread of it causes general ill-health. Little or no benefit following the earlier operations, the patient often abandons treatment. In cases associated with suppuration each operation exposes a raw surface, over which pus flows, and there is necessarily a tendency to septic absorption, and to the spread of the bone affection. Finally, fatal results have occurred from meningeal infection apparently directly due to operation, and I believe these repeated timid procedures are more dangerous than a single severe but curative measure.

In conclusion, then, I would urge that this operation, carried out with due precaution, should be performed in all cases of nasal polypi in which there is extensive disease of the ethmoid bone, in which recurrence of polypi has repeatedly followed other methods of removal, and in which suppuration is present in the ethmoidal cells or other accessory cavities.

[Dr. Lambert Lack's paper was illustrated by (1) a series of diseased middle turbinate bodies, showing the transition stages between simple edema and true polypus, and (2) a series of microscopic slides of sections of the bone underlying polypi, showing various degrees of periostitis and osteitis.]

MR. CRESSWELL BABER said: Gentlemen, the subject of the treatment of mucous polypi of the nose is one of perennial interest, because of the exceeding commonness of these growths, and of the difficulty they often present in treatment.

The treatment resolves itself into two stages: (1) removal of the growths; (2) after-treatment with the view to preventing their recurrence.

(1) Removal of the growths. It is pretty generally agreed this should be carried out with a snare, hot or cold. I am always in the habit of using the cold snare, and with a rather thick steel wire. I have repeatedly made up my mind to use the galvanic loop, but have always, after a short trial, come back to the cold, chiefly because I find no special advantage from the hot, and considerably

more trouble in using it. My own practice is to snare out the growths as carefully as possible at sittings with about a fortnight's interval, even removing small roots in the middle meatus by this method. The adjustment of the snare when a somewhat thick steel wire is used scarcely ever meets with any difficulty, but in the event of such an occurrence the polypi may be drawn forwards with a sharp hook or a fine pair of catch forceps.

In getting the loop round a polypus projecting through the choana a finger in the naso-pharynx is of course invaluable, and if it be impossible to secure a polypus in this position, by this method, Lange's blunt hook may be used, or, if necessary, a pair of forceps guided by the finger. The use of forceps for the removal of polypi is not, in the ordinary way, to be recommended.

(2) After-treatment. The routine after-treatment hitherto adopted consists in burning the so-called roots of the polypi with the galvanic cautery. This method is only suitable for cases in which the point of origin of the growths is visible, for to plunge a cautery blindly into the interstices of the ethmoid bone seems to me a useless and dangerous proceeding. The same remark applies, perhaps with less effect, to the use of a chemical caustic, such as chromic acid. It has been my habit for some years to use a spray of rectified spirit (as first recommended by Miller), varying from 25 per cent to full strength, for its shrinking properties on the mucous membrane, and I think with benefit.

A word of caution is necessary to the effect that in old people (those over seventy) it is advisable either to leave the growths alone, or to operate on a small amount at a time, partly on account of shock, and partly on account of the hemorrhage, which, though it may be minimised by extract of supra-renal capsule used in addition to cocaine or eucaine, is not a negligible quantity. The question of shock is more important still in galvanic cautery operations on the middle turbinate body, and should always be considered, especially as these growths are often found in persons with asthma and weak hearts.

We next come to the question whether any further treatment is advisable. This must depend on the diagnosis which we are able to make in each individual case. Mucous polypi, which according to most recent authors may be defined as the result of an inflammatory serous infiltration of the mucous membrane of the ethmoid, seem liable, speaking clinically, to be produced by almost any irritation. They may be caused not only by disease confined to the ethmoid, but also by the irritation of the discharge from an em-

pyema of the antrum, or of the frontal or sphenoidal sinuses, and by such different conditions as foreign bodies in the nose and malignant disease.

They are not, as assumed by some observers, necessarily associated with suppuration at all. These different conditions must therefore be carefully searched for before any further treatment is undertaken.

Having excluded non-ethmoidal causes, the form of the disease in which the morbid changes are confined to the ethmoid remains to be considered. Our knowledge of the pathology of this affection is still imperfect; but it is generally considered by recent observers that the inflammatory trouble giving rise to mucous polypus may be limited to the mucous membrane, or that chronic proliferating periostitis, and osteoplastic or rarefying osteitis (or both), may also be present. Hajek considers that, except in constitutional dyscrasiæ (tuberculosis and syphilis), these processes result from the extension of the inflammatory infiltration of the mucous membrane and the periosteum into the bone and its medullary spaces. According to the latest published researches, those of Cordes, the bone may be primarily affected from typhus, influenza, scarlet fever, and other exanthemata; or secondarily from the mucous membrane. This author, by the way, does not confirm the presence of rarefying osteitis, although he admits that absorptive changes constantly accompany the osteoplastic processes. When all the polypi have been thoroughly extirpated, and the exposed mucous membrane either burnt or removed, and no recurrence takes place, it is assumed that the mucous membrane only is implicated, and no further treatment is necessary. It is impossible to ascertain the percentage of these cases, because, as a rule, the patients do not return to the surgeon more than once or twice for inspection. It must also be borne in mind that very long intervals between the recurrences (if not actual absence of the same) occur in cases in which to all appearance the ethmoid bone has undergone distinct hyperplastic changes. A single polypus projecting into the choana often does not recur in my experience, but as a rule it is impossible to foretell the likelihood of recurrence. If frequent and rapid regrowth occur, we may take it for granted that the bone is affected with osteitis, as above mentioned, or at least that the mucous membrane in the cells, which escapes our vision, is participating in the disease. In these cases the only method of preventing recurrence is to remove the affected bone and cells, and this is indicated whether we regard the bone or the mucous membrane as the starting-point of the disease.

In the former case, the bone requires removal, as the source of irritation, in the latter because without removing the bone, the mucous membrane in the cells, which is giving rise to the trouble, is inaccessible. The first step is the removal of the anterior half of the middle turbinated body with forceps or scissors, and snare, if it has not been done already for examination or treatment of the frontal or maxillary sinuses. This little operation renders the anterior ethmoidal cells more accessible. If this is insufficient, the ethmoidal cells and walls may be removed with Grünwald's or similar forceps, and curetting them with scoops of various shapes, due regard being had to any possible injury to the cribriform or orbital plates. In my experience the removal of the middle turbinated body is satisfactory, but the other measures are less so, on account of the hemorrhage which so rapidly obscures the view, and prevents much being done at one time. Neither of these measures, however, as far as I know, gives a certain guarantee against recurrence. When the discharge from the ethmoidal cells is distinctly purulent there is more necessity for opening them freely, as suppuration in these cavities is not devoid of danger to the surrounding parts. Of the exact procedure recommended by Dr. Lack, *i. e.*, the removal of all the ethmoidal cells at one sitting with a Meyer's ring-knife, I have no personal experience; I presume that such an operation would only be employed in cases of frequent and rapid recurrence, but even in these cases I think it is only to be recommended under two conditions: (1) if it can be shown that the operation gives immunity from recurrence; (2) if it can be performed without risk of injury to the contents of the cranial or orbital cavities. Whether it has a deleterious effect on any remaining sense of taste or smell perhaps Dr. Lack will be able to tell us. At the same time it must be admitted that any operation which, without danger, will prevent recurrence of these growths will be a great boon to sufferers from this disease.

Although for the sake of clearness I have divided the ethmoidal cases from the cases of polypus due to disease in the other sinuses, it must be understood that the two conditions often co-exist, and that the relation between them is not yet clearly established.

On the whole, I think that the chief advance in the treatment of mucous polypi lies in the direction of a more accurate diagnosis of the cause in each case, which is the only guide to rational treatment.

In these few remarks I have omitted all reference to papillomata and other non-malignant growths which are sometimes called

polypi, in order to keep the discussion to the important subject of mucous polypi, neither have I made any reference to the treatment of empyema of the larger accessory cavities, or of polypi contained in them.

If the discussion draws forth the opinions of members on the comparative value of the different methods of removing mucous polypi, and of the various forms of after-treatment, especially in regard to the removal of bone from the ethmoid, it will not have missed its object.

MR. W. G. SPENCER agreed with the treatment set forward by Dr. Lack, but not with his pathology of polypus, which, he thought, remained unknown. The inflammatory theory required a great deal of further evidence for its firm establishment. By the acceptance of the latter, the pathology of the nose was entirely separated from the pathology of other mucous membranes, and of the polypi which occurred in them. No doubt the nose was the favorite locality for the formation of muco-polypoid growths, yet there were varieties of this formation in other mucous membranes, *e. g.* of the rectum, bladder. In the latter there was fairly strong evidence that they originated in the submucous tissue, whether they began as actual fibromata or were always of a myxomatous nature. It was generally agreed that the shape of polypi was due to the action of gravity, but their occurrence in several places, and sometimes on each side of the nose, in the frontal and ethmoidal cavities and maxillary sinuses, afforded little clinical evidence of a previous primary inflammation of the bone or periosteum. When this was present the resulting growths were not typical mucous polypi, although, as in the case of other tumors, inflammatory conditions and incomplete removal promoted recurrence. But there must be an essential difference between the vascular granulations, however edematous, which occurred after, *e. g.* syphilitic necrosis, injury, or the presence of a foreign body in the nose, and an ordinary mucous polypus. Again, the mucous polypi were certainly the most frequently occurring, and Dr. Lack had referred to the difficulty in some cases of distinguishing them from inflammatory conditions of the inferior turbinate, which was of course very commonly inflamed, yet not the common site of the polypi. There was no sharp line of distinction between true mucous polypi (nasal or naso-pharyngeal) and those which ultimately turned out to be sarcomata. Even carcinomata in the nose had very often projecting polypoid masses indistinguishable microscopically, or very nearly so, from the simple polypi.

Turning to the question of the bone change, it was an oft-discussed matter, and difficult to prove either way. In the specimens shown by Dr. Lack, which he had not very carefully examined, he saw no reason which would cause him to make up his mind on the subject. The changes in the bone were secondary, but not primary in his opinion. Polypi in other situations had nothing to do with

the periosteum or with the bone, yet Dr. Lack would try to show that nasal polypi were the result of perichondrial or periosteal disease. Changes in the bone varied, but a great deal of the permanent bone of the nose was cancellous, and some of the specimens appeared to present this normal cancellous bone. Very little information on this point had been added to the subject of the old controversy between Dr. Woakes and Dr. Sidney Martin. No doubt many of the specimens showed secondary atrophic osteitis occurring in connection with the pedicle of the polypus; the larger the polypus became the more marked the appearance was. So he thought that very little trustworthy clinical evidence had been adduced to prove that polypi were preceded by inflammatory changes. The true untouched muco-fibromatous polypus had more the appearance of a real benign tumor, single or multiple as the case might be.*

With regard to treatment, he was in accord with Dr. Lack's method in extensive cases, where it was of great value to commence the treatment by a thorough removal under an anesthetic. He thought, however, that recurrence might take place in some cases. Its value lay in the reduction of the number of sittings hitherto necessary for the patient when there was extensive change present. It was necessary to remove the pedicle of the tumor, and because of the convoluted structure of the nose to remove a large amount of bone in order to get at the pedicle. He preferred to insist upon the necessity of removing the whole of the pedicle, viewing it as a tumor, rather than, as Dr. Lack held, of removing bone primarily diseased.

MR. CHARLES PARKER said: I should like to add what weight I can to the reasonings and conclusions advanced by Dr. Lack. I have, I think, seen every case on which he has operated during the last three years, and have watched their progress afterwards; moreover I have myself frequently adopted the measures he advocates for the cure of polypi. The microscopic specimens before us to-night clearly prove that accompanying polypi there is a bone disease, presumably of the nature of rarefying osteitis. The fact that simple removal of polypi does not cure the disease points to the conclusion that the origin of the trouble has been left behind; and on the other hand, the old and recognized fact that if the bone underlying the attachment of a polypus can be removed with the polypus recurrence is far less likely to occur, suggests that in this case the cause *has* been removed. Again, it is undoubtedly possible to trace clinically every stage of a polypus, from a mere edema of the mucous membrane covering the anterior end of the middle turbinated bone, to a definite fully formed pedunculated polypus, and to prove that there are as definite, though less marked, bone changes when the mucous membrane is only edematous as when it has degenerated into true polypus; from

* Gérard Marchant, in *Traité de Chirurgie*, Duplay et Reclus, 2me ed, 1898, t. iv, p. 670.

Ziegler, *Lehrbuch d. allg. u. spec. pathol. Anat.*, 9te Aufl., 1898, Bd. ii, S. 626; also H. Mackenzie, "A Case of Diffuse Papillomatous Degeneration of the Nasal Mucous Membrane," *Lancet*, 1896, vol. ii, p. 460.

which it is, I think, fair to argue that the bone trouble precedes the polypus. Therefore one must conclude that both the microscope and clinical experience favor the view that the bone disease is the cause rather than the result of polypi. This being so, operative measures must have for their object the removal of every portion of diseased bone, and this in a confined cavity like the nose can only be done by some such method as that put before us to-night. In several cases in which I have adopted Dr. Lack's treatment I have had reason to realize the futility of my previous efforts to cure the case with a snare; for having by this latter means removed all visible definite polypi and brought the case to that point where on examination one sees only a lot of small polypoid excrescences springing from the ethmoid bone, and situated where the middle turbinated should be, I have proceeded to the more radical operation, and have been astounded by the quantity of large polypi removed by means of the ring-knife—literally handfuls. It was evident that directly the lower, visible polypi had been removed, and thus pressure relieved, others had descended by gravity to take their place, and, judging from the number afterwards taken away with the ring-knife, there were sufficient polypi to last these patients a lifetime had I continued treating by means of the snare. As to the operation, I follow the same procedure as Dr. Lack, and do not think his methods can be improved upon. As to the results, I think they are very satisfactory. In all my own cases, and those of Dr. Lack's which I have observed, there has invariably been very great improvement, and in the majority of cases I think the word "cure" is none too strong. Considering the chronicity of these cases, and the frequency with which they are operated upon, I think the patients themselves become good judges of the results, and after this more rapical operation they all agree in saying that they have not been so comfortable for years, even if they cannot be classed amongst the cured; and so far I have never seen any really serious ill results. Finally, I think this operation should be employed in all cases where recurrence has occurred more than three or four times, in all cases of multiple polypi accompanied by suppuration, from whatever source, and in those cases where the middle turbinated has disappeared and its place been taken by mucous membrane in a state of polypoid degeneration. In these latter cases there is sure to be very extensive disease hidden from view.

DR. DONELAN desired to add his tribute of congratulations to the readers of the two papers. He thought the operation described by Dr. Lack would prove a valuable one in the severer cases, while in others the snare would continue to be used. Notwithstanding the specimens, he felt the theory that the disease originated in the bone was "not proven;" and the fact that one of the authorities quoted by Dr. Lack had admitted that the bone was not affected in the slighter cases, led one to believe that the disappearance of the turbinals was due to more familiar causes, such as pressure and impaired blood supply, rather than to a rarefying osteitis. In-

stances had been given of mucous polypi in the rectum, and at another point in the antipodes of our interests, where the only "osseous" structure was the os uteri; but he thought examples of mucous polypi unconnected with bone might be found nearer home—as, for instance, on the soft palate—and he had at present a case in which he had removed five or six polypi from the angle between the cartilaginous septum and the ala, and at some distance from the nasal bones. If the rarefying osteitis were admitted to occur as extensively as Dr. Lack claimed, he would like to ask him what prevented the process from extending more widely through the cranium.

DR. SCANES SPICER had hoped that, in order to promote the full-est ventilation of the subject, some one would have risen to advocate the opposite side of the case to that put forward by Dr. Lack. He himself could not do so, for he agreed with Dr. Lack practically *in toto*. But, in justice to previous workers on nasal problems, he must point out that operative procedures identical with those described by Dr. Lack had been performed in suitable cases both in England and Germany, at all events, for many years. Even since an advance copy of Grünwald's work on *Die Lehre von den Nasen-citerungen* had been sent to him for review in 1895 he had tentatively used all the methods and instruments described by that author, and amongst them his method of attacking severe cases of polypus and suppuration of ethmoidal labyrinth—surely the same thing as polypus and suppuration of lateral mass of ethmoid. [See cases 149, 151, 155, which can now be read in Lamb's English translation of Grünwald's work.] Further, after a large experience of these methods, he had himself exhibited cases at the Laryngological Society in which these very procedures had been carried out on the ethmoid body for multiple polypoid degeneration combined with ethmoidal suppuration,* *i. e.*, after having formally excised the middle turbinated bones, to curette away with due caution any diseased tissue in the subjacent ethmoidal labyrinth; and he had further supported and advocated the adoption of these measures (*loc. cit.*) in suitable severe cases—which a further experience now enables him to even more strongly recommend. He therefore felt it incumbent on him to make it clear that in consequence of Grünwald's work these methods were known to some nasal workers at least five years ago, and have been tried, and to a large extent adopted—in order to clear English rhinology from the unjust imputation of being so many years behind the times.† Nevertheless he heartily congratulated Dr. Lack on his bold and powerful advocacy of the application of sound surgical principles to these nasal disorders, on his admirable restatement of the whole problem, and on his painstaking reinvestigation of the histological changes. Here Dr. Lack's results appeared to him to agree with those of Grünwald and Woakes, except for the difference with the latter as to the amount and frequency of necrosis. As far as he knew, he

* Proc. Laryng. Soc. Lond., Vol. iv, pp. 79—81, 1897.

† Speaker's review of Grünwald's 2d ed., *Journal of Laryngology*, May, 1896.

believed the credit of first maintaining the casual connection between ethmoid bone disease and polypus belonged to Dr. Woakes. He had the more pleasure in stating this, for he was by no means a supporter of the latter in his use of the term "necrosing ethmoiditis." In a few cases the speaker was well aware of real necrosis—large sequestra—in cases quite free of syphilitic taint, and it was the comparative rarity of genuine necrosis that had led him to question the propriety of applying the epithet "necrosing" to a condition of which necrosis was only a late and occasional accident. He feared that Dr. Woakes had delayed that recognition of his work (which was justly his due) for many years by that unfortunate term—unfortunate in that it was taken to imply that he taught there was some special necrosing pathological process found in the ethmoid and confined to it, which was essentially different to any known to occur elsewhere in the body. The speaker thought that if the changes observed had been originally described in terms of general surgical pathology as "muco-periostitis," "rarefying osteitis," "sclerosing osteitis," "dry caries," etc., and had been recognized as not affecting the ethmoid only, but many of the adjacent bones of the head, the meaning would have been at once grasped, and full recognition accorded. With reference to the performance of the operation in question, the speaker has from the first adopted the methods and instruments of Grünwald, with some modifications. The neck of the middle turbinated is first cut through with Grünwald's forceps;* the cold wire snare is then passed well into the slit made, over the genu, and back over the middle turbinated as far as possible, and then tightened up so as to cut off the anterior half. The posterior half is then removed with the turbinotome when diseased. Polypi, cysts, abscesses, granulations, cholesteatomatous debris, soft bone and necrotic pieces, are then cautiously but thoroughly curetted and removed with Grünwald's spoons and curettes,† until no polypus or other diseased tissue is left, and healthy firm bone is felt. Of course great caution is necessary to avoid getting into the orbit or through the cribriform plate. The speaker nearly always operated under a general anesthetic and in the sitting posture, and staunched hemorrhage as he went, so as to have the parts well in view, and kept the anatomical relations well in mind. Occasionally he operated with cocaine only. He had seen no bad result. On the other hand, the patients had been most satisfied with the result of the operation, in the way of much greater relief of symptoms, of prolonged freedom from recurrence, and of diminished suppuration, and in many cases of cure lasting now over three or four years. He preferred not to plug after the operation, and it was very seldom necessary. He insufflated iodoform, and applied parolein and soothing ointments freely, to prevent the secretions consolidating into hard dry scabs, which were difficult to get away, and sometimes led to epistaxis in dislodging. After the first day he used sprays

* Table II, Fig. 1, 2d German ed.

† Table II, *loc. cit.*

of weak warm alkaline antiseptic lotions. To revert to the etiology of polypus, each speaker had referred vaguely to "disease of the bone" without giving any clue as to what the cause of this disease was. There was too great a tendency to avoid this vital point. One must not assume that disease is some inexplicable inherent vice until the position has been excluded, that it is a departure from the normal due to some defective adjustment of the organism to the external, or some traumatism from outside. Are such to be found in traumatisms due to falls and blows, initiating changes in the muco-periosteum which are not recovered from, and become chronic? Are polypi, etc., more common in erect humans than in quadrupeds, which are less liable to injury from falls and blows? Are not the rapid and extreme variations of temperature of our inspired air, the irritation of dust and pathogenic organisms, and the chronic congestion due to nasal stenosis enough to explain the persistence of an existing traumatic muco-periostitis, if not to initiate the latter, with its sequels of polyp is and bone disease?

MR. DE SANTI, whilst admitting the excellence of the paper by the opener of the discussion, could not but feel some disappointment that there was nothing new in it. Firstly, as regards the treatment of nasal polypi, he had for a long time past considered and taught that more radical measures for their removal were required. The removal of polypi by galvano-caustic loop, or by the cold wire snare, was extensively practiced up to the present time, but he considered that, though in certain cases these methods were suitable, they were generally only palliative and not curative in result. Certainly, in his opinion, the cold-wire snare was infinitely preferable to the galvano-caustic loop, as the *fons et origo* of the polyp could be torn away by it, whereas with the galvano-caustic loop the origin of the polyp was left. Taking into consideration the great frequency of recurrences in these cases, the numerous sittings required if the snare be used, Mr. de Santi strongly advocated removal by some such radical measure as described by Dr. Lack. To say that radical measures were new was totally wrong; the older surgeons, such as Mitchell Banks, Jacobson, etc., had strongly advocated removal of the middle turbinals with all the polypi that might be growing from them, and though it had been the custom for laryngologists to decry these operations and speak of them as barbarous, Mr. de Santi was glad to hear at this meeting that laryngologists were inclined to favor the more frequent use of general operative measures. Dr. Lack's operative procedure was hardly new; the speaker himself had on several occasions scraped out masses of polypi under general anesthesia, sometimes with the sharp spoon, sometimes with the ring-knife, and he also used forceps and scissors. In Mr. de Santi's opinion, therefore, radical operation should be resorted to much more frequently for the cure of nasal polypi. Under the older methods of treatment by the snare the patient became a regular "annuity" to the surgeon, and at the end, after an expenditure of much time and money, and suffering a good deal, was often no better. As regards the pathology of nasal polypi, he considered there was not the slightest evidence of

rarefying osteitis as the cause. Why should there be rarefying osteitis? Surely such a condition would have an origin such as syphilis, injury, etc. He looked upon any rarefying osteitis that might be present as secondary to the polypi, and not a primary condition. As a matter of fact he came to the conclusion that nothing was really known as to pathology of nasal polypi; at all events he himself was quite ignorant of their causation, and he believed that to be the condition of most members of the society present.

DR. HERBERT TILLEY thought that Mr. de Santi should have drawn a definite distinction between Dr. Lack's operation and the somewhat promiscuous intra-nasal operations with which Mr. de Santi had credited other surgeons. In the presence of so distinguished a surgeon as his former teacher, Mr. Christopher Heath, the speaker hesitated to deprecate too strongly the use of forceps in the removal of nasal polypi, because in his student days he had constantly seen them used. He was constrained, however, to point out the ease and perfection with which nasal polypi could be painlessly removed by means of a wire snare, guided by means of a reflected light. This was a very different proceeding from the use of forceps. Under the latter circumstances he had frequently seen healthy mucous membrane and pieces of middle and inferior turbinate bones removed, while more often than not, only a few polypi were removed, and inefficient removal was talked of as "recurrence of the growths." The operation advocated by Dr. Lack was an entirely different procedure, in that it was scientifically conceived, and should be carefully and skilfully executed; furthermore, the operation was limited to diseased structures. The speaker could testify to the efficiency of the operation in those cases where careful removal by means of a snare had failed to produce immunity from recurrence. He had obtained some excellent results in such cases. He thought that in some cases, possibly the majority, mucous polypi originated in the mucous membrane, and that the bone was secondarily involved. The inflamed bone would then keep up the formation of polypi, even though the latter were from time to time removed. In support of this view he adduced those somewhat exceptional cases where mucous polypi grew from the septum, and those common cases in which they lined the walls of suppurating accessory cavities in which the underlying bone was not as a rule diseased. As to the primary cause of the inflammation, he had as yet no definite opinion to offer. That well-marked bone changes were met with in nasal polypi seemed obvious, and he could not understand how members could differ from this view after examining the microscopic specimens illustrating these bone changes which had been placed at their disposal by the introducer of the debate.

DR. STCLAIR THOMSON still suspended his judgment on the subject of debate, and would therefore limit his remarks to some side points. He knew that he had gone out of fashion to quote authorities on scientific, and particularly on medical matters; any appeal to authority might savour of dogma. Still, he thought it would be well before entirely accepting the views which had been advanced

in the debate to recall the teaching of two well-known and trustworthy rhinologists. Hajek had thoroughly investigated the pathology of polypus, and had consistently taught that the inflammation spread from the outside inwards, and not from the bone outwards. Then Grünwald, in the latest edition of his book, which showed enormous research, expressed the opinion that "polypi, in a majority of all cases, are almost as good as pathognomonic of empyemata of the accessory cavities, or focal suppuration in the nasal passages." From his own experience the speaker was inclined to agree with this, for the more expert he became in recognizing empyemata, the fewer cases he had of recurring polypi. In cases where the polypi had been most persistent, their growth ceased at once when the offending accessory sinus had been drained. Possibly the operation recommended owed some of its success to the fact that the removal of the middle turbinal facilitated drainage from the frontal and maxillary cavities, and for suppurating ethmoiditis it was, of course, particularly suitable. He understood Dr. Lack to say that one of the indications for the operation was suppuration in an accessory sinus. Unless the sinus happened to be the ethmoidal cells, Dr. Thomson thought the detection of suppuration elsewhere was, on the contrary, a contra-indication. Mr. Baber had drawn attention to a practical point, which the speaker did not remember to have seen mentioned in most textbooks. This was the danger of collapse and also of hemorrhage in operating on nasal polypi in elderly subjects. Those who had not met with this occurrence would hardly believe what alarming symptoms sometimes ensued from removal of a simple nasal polypus in an old person.

DR. FITZGERALD POWELL said that he thought they were under a debt of gratitude to Dr. Lambert Lack for having brought forward this scientific and practical method for the treatment of nasal polypi. Although he may not have been the first to remove by scraping diseased bone and polypi from the nose, he was, undoubtedly, the first to teach them, in a systematic and scientific manner, the best method for obtaining an early and radical cure. He had himself, since its introduction by Dr. Lack some years ago, been in the habit of practicing this operation, from time to time, in suitable cases, and his experience was that it was most efficacious, entirely safe, and having the great advantage that it caused much less suffering to the patient than the repeated sittings, with the application of cocaine, and the cold snare, with their attendant pain and mental agitation. Much had been said as to the danger of the operation, and the likelihood of injury to the cribriform plate of the ethmoid, but, having regard to the anatomy of the skull, it would be a difficult matter, and force would have to be used to push a large Meyer's ring-knife up so far. On the other hand, it would not be difficult to injure the orbit, but with care this can be avoided. With regard to the pathology, he had no doubt that in a large number of cases, a condition of rarefying osteitis, or perhaps necrosis resulted, the causation of which might

well be ascribed to syphilis, tubercle, traumatism or sepsis. But on the other hand, he thought it quite possible that a condition of inflammatory edema might arise in the mucous membrane, blocking the orifices of the mucous follicles, and to this cause he ascribed in some cases the presence of one or two small polypi, such as he had found growing from the septum or the upper edge of the posterior choana and projecting into the post-nasal space. He had removed them with the cold snare at one sitting, and had had no recurrence after two years. During the operation there was a considerable amount of hemorrhage, and after the commencement of the curetting he was not able to see very much, and had to rely on what he could feel with the finger and the curette. He considered it very necessary for the control of the hemorrhage to plug the nose, and he always did so, using strips of iodoform gauze, which he kept in the nose generally for two days, changing the gauze after the first twenty-four hours. Occasionally a recurrence of the polypi did take place after the operation, but they were few in number, and could be removed by the snare or a second scraping, which effectually removed the tendency to recur.

MR. WAGGETT said that *apropos* of Dr. StClair Thomson's remarks *re* ethmoidal cell disease, it was interesting to note a paper by Lichtwitz, in which attention was drawn to the unexpected frequency of accessory sinus empyema, as detected in the *post-mortem* room. That author stated that whereas in the Special Clinics of Chiari and himself, only two per cent of the total number were noted as empyema cases; the evidence of general *post-mortem* rooms showed that class of disease to be vastly more frequent. The reports of Harke, E. Fränkel and Lapelle recorded over 100 cases from a total of 700 autopsies. Among sixty-three cases detected in the *post-mortem* room only one had been suspected during life. With regard to the general question of the relation of mucous polypi to bone changes, it was interesting to note that some of the speakers, while admitting such a relation, asserted that the bone changes were of secondary origin and due to the polypoid degeneration of the mucous membrane. In the face of Dr. Lack's thesis the assertions of dissentients should be supported by evidence. It was not surprising that the ethmoid bone, which differed in many respects from any other bone in the skeleton, should be subject to a pathological change of the character of a rarefying osteitis not met with elsewhere.

DR. WILLIAM HILL hoped that a wrong impression would not be created outside the Society by reason of the general terms in which those who approved of radical measures on the ethmoidal cells had spoken on this occasion. The object, of course, of those who attacked a case of polypus disease with ethmoidal suppuration, whether according to the method of Lack or Grünwald, or other operation similar in principle, was to remove the whole of the disease under general anesthetic at one sitting. As a matter of personal experience, however, he felt bound to admit that this ideal was not always attainable, even at a long sitting. He had the ad-

vantage of possessing a slender little finger, with which he explored the nasal fossæ during the course of an operation; but in spite of every precaution he had often either left some polypi behind or insufficiently opened the ethmoidal cells, so that further operations under anesthesia were sometimes necessary; and there was generally some trimming up to be done with snare or punch forceps at subsequent sittings under cocaine. The snare operation alone was only useful in simple cases, and was rarely, if ever, radical in recurrent and suppurative ones. In clinical teaching, whilst calling the attention of students to the inartistic and sanguinary methods of treatment adopted by those general surgeons who used *blindly* to push forceps up the nose and remove all they could lay hold of, including an occasional turbinal, diseased or otherwise, the speaker had always been careful to call attention also to the fairly good results attending such measures, in spite of the absence of technique; and what was more remarkable, as far as he could gather, no fatal result had attended the use of the forceps, even in inexperienced hands; and generally speaking, the operation had not led to harmful sequelæ, though doubtless it often failed in its object from imperfect removal. In conclusion, he agreed with those speakers who insisted that where ethmoidal suppuration was present some radical measure, such for instance as that advocated by Dr. Lack, was essential to insure a cure of nasal polypus.

DR. DUNDAS GRANT said that there could be no doubt that Dr. Lack's operation ought to be looked upon as a received surgical procedure, the only possible difference of opinion being with regard to its indications. Those laid down by Dr. Lack pointed to suppurative of the ethmoidal cells. With regard to the necessity for radical operation in cases of recurrent polypi, he thought it might sometimes take other forms, *e. g.* there were cases in which the polypi could only be eradicated after an opening had been made into the antrum. Dr. StClair Thomson indicated that free washing out of the antrum had caused disappearance of polypi; he had himself also observed this. In other cases that had not occurred, and several times he had thought it justifiable to open the antrum of Highmore and clear away its entire inner wall with the unciform process for the purpose of eradicating polypi situated in the middle meatus. Sometimes there might be polypi growing from the front of the sphenoid bone. He related a case in which he had removed such a polypus. With regard to polypi in the post-nasal space, a general anesthetic was in his opinion necessary, the left forefinger being introduced into the naso-pharynx. The difficulty in putting the snare round such a polypus was considerable, and the forceps, passed through the nose under the guidance of the finger in the naso-pharynx, was the only instrument which could be used under a short anesthesia like that of nitrous oxide gas. In order to get complete removal of polypi and to get a snare applied to as many polypi as possible, it was often necessary to remove the anterior of the middle turbinate body. There was sometimes another form of obstruction which had to be removed, and that was the polypoid swelling on the

anterior lip of the hiatus semilunaris, which sometimes projected to a considerable degree into the nasal cavity; and the only way of removing it satisfactorily was that recommended by Killian, which he (Dr. Grant) had himself done several times. It was to pass the point of sharp pair of scissors right into the middle of the growth, and to remove the upper and lower half separately by means of the snare. This had enabled him to reach and remove the polypus which was inaccessible both to vision and to touch until that was done. Nobody, he was sure, would regret more than Dr. Lack if it became the custom for all and sundry to perform his operation on every patient who had polypi of the nose. In a wisely selected number of cases, however, it was absolutely indispensable and offered the most promising results.

DR. BOND heartily supported Dr. Lack in his method of operating, but there were certain cases in which one might come to grief. Dr. Lack's method of operating was different from Bank's, which latter consisted in taking hold of the middle and upper turbinate, and pulling away with forceps as much as possible from the top and middle of the nose. Dr. Lack's operation was a different thing altogether, but one might have trouble in operating if one did not pick one's case somewhat carefully. The most serious cases were those referred to by Dr. StClair Thomson, namely cases of polypi occurring in old women over sixty. In such a case the front of the nose on each side was commonly seen to be filled with what seemed to be ordinary polypi, but the case was often one of malignant disease with polypi in front. If in such a case Dr. Lack's procedure was used under the belief that the case was one of general nasal polypi the operator would be surprised at the result. There were other cases where the nose was very much obstructed, and a little edema and granulosomatous tissue might be seen in front, with syphilitic necrosis, etc., behind. On scraping away vigorously in such a case a violent hemorrhage might occur. He had seen one instance of such a case. Somewhat active treatment at the posterior part of the nose was carried out, and sphenoid cavity opened and packed, but with damage to the vessels inside the skull. Dr. Lack's operation was, in his opinion, an admirable and successful one. He wished to mention that there was no danger of damaging the cribriform plate, etc., if the operation were done with ordinary skill; such danger was in large part imaginary. The second point he remarked on was that the cautery had ceased to be used and recommended, as in times past, in the treatment of nasal polypi. It was recommended in the text-books as of use in treating polypi, and cauterization of the stumps was advocated. He believed the latter to be a great factor in the production of bone disease. He thought curetting of the mucous membrane should be employed more than it had been. In conclusion, he thought the individual factor played a very important part in the comparative success of the operation: one operator would get good results from Dr. Lack's method, whilst another would get much the same result from operations with extensive curettings carried out at several sittings.

DR. WYATT WINGRAVE said, with reference to the pathological aspect of the discussion, Dr. Lambert Lack's specimens illustrated one phase only of polypus formation. Many of the sections showed only normal cancellation changes, a process of osteoporosis which is essential to the development of the accessory sinuses, and continues until very late in life. The "osteoclastic" operations so well seen in this rarefying process are often misinterpreted as being morbid; but it is only when greatly exaggerated that it should be so construed. In some of the slides the periosteal and osteoblastic activity was well marked, but this he considered as bearing only a coincidental relationship to the simple form of polypus. For all practical purposes polypi might be divided into two groups: (1) simple; and (2) granulation. While the first group retained to a great extent many of the local histological features, the second group consisted almost entirely of small cell tissue in various degrees of myxedematous degeneration, so that when fully developed they could not easily be distinguished from the simple variety. It was in the granulomatous group that the osseous changes were the more marked, so that the polypus was only symptomatic of deeper sinusal changes. Reference had been made to the necessity for exercising care when removing polypi in the aged. While emphasizing this, he thought that in addition to the risk of hemorrhage from senile changes in the blood-vessel, there was also a danger due to advanced cancellation. The rarefaction was often so extensive that the turbinals proved to be as brittle as "biscuit," and great care had to be exercised in limiting the amount of bone removed with the polypus.

The PRESIDENT congratulated the Society on a most useful discussion; he thought that from this time forward a more or less new departure would go forth to the world as being the view held by certain members of the Society, stamped with the approval of the Society. The only thing to be afraid of was that this somewhat radical method of treatment might be adopted by men who had not the skill of the great majority of the members of the Society. It was a point which ought to be emphasized, and which had been emphasized at a previous meeting of the Society. It was a method only to be employed in exceptional cases, and by those who had an exceptional amount of experience of intra-nasal disease. Another important point was the care to be exercised when polypi occur in old people. This had been overlooked in the past. The stress laid upon this was an additional gain to science and medicine.

DR. H. LAMBERT LACK, in reply, thanked the members of the Society for the reception of his paper, which was more favorable than he had expected. In reply to Mr. Baber, he said he had watched some of his cases as long as six years, and so far from destroying the power of smell, in some of the most chronic cases, in which the patient had smelt nothing for years, it had returned after the operation. With Mr. Spencer's remarks he could not agree; but there was not time to go into them all. He doubted whether anything at all comparable to a nasal polypus ever arose

apart from bone, for the rectal polypus was an adenoma, and these and other similar "polypi" were true tumors. The old idea that nasal polypi were tumors he thought had been given up years ago, and therefore he had not considered it worth while to allude to it. The structure and whole history of nasal polypi quite precluded such a theory. He had, however, very carefully separated granulation and inflammatory growths from nasal polypi, as they were both microscopically and clinically quite distinct. Again, Mr. Spencer said that there were all stages between a nasal polypus and sarcoma. There was no evidence to support that view. A nasal polypus might be removed year after year and still never become a sarcoma. Several speakers, whilst reluctantly admitting that bone changes take place, claim that they are secondary to, and not the cause of, polypi, and yet can bring no evidence. On the contrary, when the diseased bone was removed, recurrence of polypi did not take place, but when the polypi alone were removed the bone changes continued and the polypi recurred. Had he not claimed that he was the first to advocate the removal of bone. This was done one hundred and fifty years ago by Morgagni and Valsalva. Morrell Mackenzie had published (in his book on "Diseases of the Horse") notes of several cases of recurring polypi in which, after he had removed the underlying bone, recurrence no longer occurred, in spite of which Mackenzie advocated the cautery in all cases. Further, Ferguson and Pirogoff had recommended the removal of the bone. But they had not advocated the thorough operation which the speaker had proposed, and neither had Grünwald. When he started to investigate the subject of the pathology of polypus he had an open mind, but on discovering the changes in the bone which were illustrated under the microscope to-night he came to the conclusion that Woakes's views were in large part correct. Where Martin had not found bone changes, perhaps it was because Woakes had removed the bone in other than polypus cases, as he ascribed many diseases to "necrosing ethmoiditis." He agreed with Dr. Powell that it was not at all easy to push a large ring-knife through the cribriform plate, and such an accident could be avoided with a little care. Dr. Tilley had said that in cases of polypi in the accessory sinuses bone disease was not always present, though the bone had never been removed for microscopical examination, and thus there was no conclusive evidence that osteitis was not always present. He could recall cases of polypi in the sinuses in which bone disease was undoubtedly present. In two cases the sphenoidal sinuses were affected, and in both the anterior wall of the sinus was extensively carious; and in two other cases in the antrum the inner wall was extensively destroyed. This evidence, as far as it went, contradicted Dr. Tilley's statement. Dr. Thomson seemed to approve Grünwald's theory. He did not think it was the general experience that sinus suppuration was invariably present in polypi. With the most careful examination it was in all probability found in less than fifty per cent of the cases, and probably the same cause that

produced the one might produce the other. Mr. Waggett had quoted *post-mortem* evidence to show the enormous frequency of sinus suppuration, which only showed that *post-mortem* records could not be accepted. The reasons of this frequency seemed to be that the accessory cavities had their opening at the top, and therefore the secretions formed depended entirely on the action of the ciliated epithelium for its removal. Thus when just previous to death this action ceased, or became inefficient, fluid accumulated in the cavity, and German authors seemed to accept the least trace of any sort of fluid as evidence of sinus suppuration. He agreed with Dr. Hill that one might have to trim up the case afterwards with a snare; but in most of his cases he had removed everything at one operation. He would try and avoid Dr. Bond's three classes of dangerous cases, and certainly would never operate on the old or feeble. In replying to Mr. Wingrave, Dr. Lack said that although some of the bone in his was normal, abnormal places were to be found in every section if looked for.

MR. CRESSWELL BABER, in reply, said, with regard to the question of the starting-point of the inflammatory trouble causing polypi, whether in the mucous membrane or in the bone, he thought the clinical evidence seemed in some cases to favor the former theory, the reason being that, as he had pointed out, mucous polypi were met with under so many different conditions. Two of the latest observers, Hajek and Cordes, found cases in which the mucous membrane only was affected; in these cases, then, how could the bone be the cause? He was interested in Dr. Lack's operation, and thought it was one to be tried in suitable cases; before it was done the state of the larger sinuses ought to be investigated. He was glad that several members agreed with him as to the necessity for caution when removing polypi in the aged.

MEETING OF THE CHICAGO LARYNGOLOGICAL AND CLIMATOLOGICAL SOCIETY.

Held February 28, 1901.

REPORTED BY EDWIN PYNCHON, M.D.

The President, Dr. T. Melville Hardie, in the Chair.

DR. OTTO T. FREER presented the patient whose case he reported at the preceding meeting as a case of

Thyroid Tissue within the Trachea

which has recently developed an apparent paralysis of the vocal cords. Upon invitation several of the fellows examined the patient.

DR. WILLIAM L. BALLENGER then read a paper entitled:

The Functional Tests of Hearing.

Functional tests have been employed by otologists for about three generations. The normal ear, up to the age of fifty, has a range of hearing from 16 up to 48,000 v. s. At the age of seventy the hearing does not reach higher than 37,000. A slight impairment of motion of the stirrup through adhesive bands or any other cause impairs the hearing. In normal adults the bone conduction is a little over one-half as long as is the ærial conduction. Each set of forks should be tested with the normal ear as these sets vary a great deal. With both ears, when normal, the pitch is the same. The practitioner should make frequent tests in order to acquire greater proficiency. In addition to the tuning forks the essayist uses both a low and high-pitch ticker watch, viz.: the "Ingersoll," which is heard at ten feet, and the other, or pocket watch, at five feet. The range of speech is confined within six and one-half octaves. Deaf mutes are not entirely deaf.

For the Weber test the C² or 512 v. s. fork is generally used, though it is not reliable when both middle ear and labyrinth are affected, nor when the deafness is bilateral. Lower forks sometimes give better results. A marked overtone in a fork is bad as the patient hears the overtone instead of the true tone. The Rinné test is not reliable in old age owing to the decreased bone conduction of senility. The Gellé test gives no results if the foot-plate is immobile.

The Bing tests may be numbered as "one" and "two." The first is secured by placing the tuning fork on the mastoid, and when the sound ceases it can be revived by closing the external auditory canal of the same ear. The second test is made by comparing the hearing through a speaking tube applied to the external meatus with the hearing when the speaking tube is attached to an Eustachian catheter which has been previously introduced within Eustachian orifice, in each case the fork being held in front of the mouth of the speaking tube. This test is made to differentiate between immobility of the stapes and adhesions of the malleus and incus.

DR. HOLINGER thought it odd that these tests were so neglected until a very few years ago. It has been suggested by Rumboldt that the stapedius muscle allows the ear to select a particular voice among many, being similar to the power of accommodation of the eye. He disapproved of the use of the watch as a test as watches lack similarity. In differentiating between tubal stoppage and immobility of the stapes when before inflation the ear drum is retracted, the result is reversed after inflation. Bezold dropped the Gellé test as being unreliable. Spongifying of the labyrinth begins between the ages of eighteen and thirty and continues to progress for some time thereafter until it eventually becomes stationary.

DR. A. H. ANDREWS: The watch is of the greatest use in testing the progress of a case. The tick is not the same when the watch is fully wound as when nearly run down. Tuning forks vary greatly. With one C² fork the bone conduction is $\frac{5}{6}$ that of air conduction, while with another C² fork it is less than one-half. The voice ranges from about 80 to 256 with an extreme limit of from 64 to nearly 1,000. In making tests for the hearing ability for conversation, forks should be used ranging from 64 to 256 v. s.

DR. CASSELBERRY asked essayist as to the distance the tuning-fork should be held from the ear in making the Rinné test.

DR. BALLENGER, in closing, said he regarded the voice test as being of but little value in diagnosis, though of use in keeping track of the progress of the case; also, that in making the Rinné test the tuning-fork should be held about one-half inch away from the ear.

DR. WILLIAM E. CASSELBERRY next made a clinical report under three headings:

a. A Suggestion Concerning Uvulotomy,

in which he favored a double cut, the first being a division of the mucous membrane covering which is then pushed up so that the muscular tissue may be cut through at a higher point. In this way the stump is covered.

b. A Case of Nitrous Oxide and Ether Anesthesia for Tonsillotomy and Adenotomy.

Nitrous oxide gas alone gives only forty-five seconds of anesthesia. His custom is to follow the nitrous oxide with ether given from an open cone, which is from time to time removed to allow the doing of the required operative steps one by one. In this way the anesthesia is continued ten minutes with a complete recovery within an hour.

c. Preliminary Note on Adrenaline.

This agent has been found to be a cardiac stimulant, particularly if the previous heart action has been weak. This agent comes in the form of a gray amorphous powder which is really a chloride. It is best dissolved in a normal salt solution and must be kept cool and not exposed to the light. In the strength of 1::10,000 it is a valuable spray and quickly contracts an engorged turbinal. As an application with a cotton swab in the strength of 1::5,000 it prevents hemorrhage after septum operations. It is also used in a solution as strong as 1::1,000.

DR. PYNCHON: In doing a uvulotomy, my method of procedure is as follows: Assuming that the uvula should be three-eighths of an inch long, and it is found to be double that length, I grasp its tip with a suitable forceps and by pulling forward stretch it to the fullest extent and then with a curved shears, such as is used by the gynecologist for vesico-vaginal fistula operations, with the curved surface of the shears upward, I make a curved cut, beginning in the middle and cutting backward and upward, so the cut is finished very close to the base of the uvula. In this way the muscular tissue shrinks more than does the mucous membrane covering and the traumatic surface is entirely at the rear, so the annoyance from swallowing is reduced to a minimum. In order to further protect the wound and prevent hemorrhage it is my custom after the operation to apply a twenty-five per cent solution of the nitrate of silver.

DR. M. R. BROWN stated that when the uvula is elastic he operates in the manner suggested by Dr. Pynchon, but when the uvula is muscular and thick he operates as Dr. Casselberry has advised. In his experience with adrenaline he has found the solutions to remain quite stable.

DR. INGALS remarked that he generally operates with a polypus snare, as there is less bleeding by this method.

DR. CASSELBERRY, in closing, said that he has had but few hemorrhages, and when they occur he uses a hot point for their control. He thought the snare would not be easy to employ in the muscular variety of uvular hypertrophy, as this form is generally met with in those who are abnormally prone to gagging.

DR. E. F. INGALS closed the programme of the evening by reading a paper entitled:

Preliminary Note on Adrenaline.

Consisting of a detailed report of thirty-one cases, wherein this agent had been used in the nose, the larynx and the eyes principally for its hemostatic or constringing effect. The solution employed was that of the chloride dissolved in the normal salt solution in the strength of 1::1,000, 1::5,000 and 1::10,000. He had also employed it in the form of a powder with a proper amount of diluent.

Dr. William E. Casselberry was unanimously elected president for the ensuing year, after which the society adjourned.

SELECTED ABSTRACTS.

Edited by

FAYETTE C. EWING, M.D., St. Louis,

with the collaboration of the

EDITORIAL STAFF.

I. NOSE AND NASO-PHARYNX.

The Treatment of Injuries and Deformities of the Bony Framework of the Nose—E. B. GLEASON—*Med. Bulletin*, Dec. 1900.

The author states that by far the most common result of nasal traumatism is dislocation of a portion of the septum from its attachment to the nasal processes of the superior maxillary bones. This dislocation is often overlooked at the time the injury is received on account of the profuse hemorrhage. For treatment of this condition (if patient is seen within a week or so after injury) the parts are anesthetized with cocaine and the fingers introduced into the nasal cavity, and by pressure of the finger tips the dislocation is reduced and kept in place by tube or nasal splint. The author speaks highly of a splint composed of the same sheet material as that employed for collapsible paint tubes.

The Gleason septal operation is described in detail, its main characteristic being a U-shaped incision.

The author notes that a common result of nasal traumatism is fracture of the nasal bones at the root of the nose. The writer gives in detail the operation devised by Laplace for above condition, but states that a similar result may be obtained by the following method:

The patient being etherized, the posterior nares are plugged with gauze, by the aid of Bellocq's cannula, to prevent the flow of blood into the pharynx during the operation. An incision is then made through the skin into the nose close to the septum at the extremity of the nasal bones. One blade of the writer's nasal cutting forceps is then thrust into the nose, and the other pushed under the skin in such a direction that when the forceps are closed and locked its edges bite into the suture between nasal bones and septum. The suture parts with an audible snap, by slightly rotating the instrument backward. The forceps are then withdrawn and the procedure repeated on the other side of the septum. A similar method is adopted for separation of suture between the nasal bones and the nasal processes of the superior maxillary. This procedure is also repeated on the other side of the nose. One blade of an Adams forceps is now inserted into the naris and the

loose nasal bone grasped between the flat blades of the instrument. Ordinarily it is easy to rotate the bone upon its long axis so as to increase the height and narrow the bridge of the nose, by pressing the anterior inferior edge of the nasal bone medially toward the septum. The same procedure is applied to the opposite nasal bone. Steel pins are then inserted so as to hold the nasal bones in position. In about two weeks they become loose and it may be necessary to remove them.

When the bridge of the nose is depressed as the result of destruction of the nasal bones due to syphilis or other causes, a platinum plate may be inserted beneath the skin of the bridge of the nose.

For the two most common congenital deformities, viz., a bulbous condition of the end of the nose and extreme prominence of the bridge of nose, for the former, a wedge-shaped piece is removed, care being taken not to disturb the cartilaginous framework of the nose. For the latter, an incision is made through skin and periosteum down to the bone. The periosteum is stripped and parts exposed. By means of a burr driven by a dental engine the redundant bone and cartilage is removed. Skin and periosteum are placed in former position and wound brought together by buried sutures, thus resulting in a linear scar, which in a year or two becomes practically invisible.

E. D. LEDERMAN.

Two Examples in Men of Severe Prolonged Attacks of Asthma, Associated with, and Apparently Dependent Upon the Presence of Nasal Polypi, Extirpation of Which Resulted in Complete Immunity from Asthmatic Symptoms—WALKER DOWNIE (Glasgow)—*Glasgow Med. Journ.*, October, 1900.

The two cases here described are of interest from the fact that both were strong, vigorous men. In both, the nasal fossæ contained many polypi, and in both the asthmatic attacks, which were very severe, were relieved and finally prevented by the removal of the polypi. The author considers that in cases of asthma associated with nasal polypi, if the attacks are not relieved by their removal it is because the operation is incompletely done. In one case the cure had lasted three and one-half years, in the other two years, with a slight recurrence due to a fresh polypus.

A. LOGAN TURNER.

The After-Treatment of Operations Upon the Septum Nasi—H. KREISSHEIMER (Stuttgart)—*Archiv für Laryngologie*, Vol. xi, No. 2, 1900.

The surgical removal of the crest or spine of the septum is one of the most thankful of rhinological operations. After the removal of the obstruction by means of the saw or trephine the patients breathe easy again in the truest sense of the word; the immediate effect of the operation is brilliant. But satisfaction is soon dampened when the operator, fearing violent secondary hemorrhage, thoroughly

tampons the operated passage. The patient suffers a good deal for the next few days, and it is always possible for the tampon to become displaced and severe epistaxis to ensue. All these disadvantages may be readily avoided by searing the edges of the operative wound with the galvano-cautery. Xeroform should then be applied to the cauterized area, and its use continued for some time; this has a decidedly favorable influence upon the healing of the wound. The author has operated upon a long series of crests and spines in this manner, many of whom had to work hard, without ever having had a secondary hemorrhage or any unpleasant after-effect or complication.

The exactitude and neatness of the entire operation is enhanced by the above method of after-treatment.

II. MOUTH AND PHARYNX.

Removal of Tonsils with Special Reference to the Farlow Punch—

CHAS. J. ORR (St. Louis)—*St. Louis Courier Med.*, Jan. 1901.

The author finds in cases of large, flat, hypertrophied tonsils with a hollowed-out center, in the long vertical hypertrophies, in segmented tonsils with large lobes, in those cases where the pillars have become adherent to the tonsils, the usual surgical procedures are disappointing. He now finds it better, after removing part of the tonsil with snare or guillotine, to use Farlow's punch as a supplemental aid. He finds the punch especially valuable in the soft adenoid variety of children. In the hard fibrous tonsil the ecraseur is to be preferred as regards bleeding. EATON.

IV. LARYNX AND TRACHEA.

Laryngeal Polypus Growing on a Prolapsed Ventricle of Morgagni—S. MONSELLES—*Monatschr. f. Ohrenheilk.*, 1900, No. 5.

The author publishes a history of a very singular case of a soft, tremulous tumor, pear-shaped, and about the size of a pea, growing from the prolapsed right ventricle of Morgagni. The patient was a railway man, aged thirty-three, and was quite cured. Others had previously attempted to remove the tumor, but had only wounded it, and hypertrophic granulations had started from the irritation produced. From the history it is clear that the prolapse of the mucous membrane of the ventricle of Morgagni occurred suddenly in consequence to violent sneezings which ruptured a small blood-vessel in the connective submucosa. The hemorrhagic infiltration of this tissue and the subsequent swelling must have partly pushed out the mucous membrane, exposing it to the continual irritation of respiration and phonation.

When the prolapsed mucous membrane of the ventricle of Morgagni becomes hypertrophied it will easily assume an aspect which even an experienced eye might mistake for a neoplasm.

G. FERRERI. (Translated by StClair Thomson.)

On Post-Influenzal Tracheal Hemorrhage—JAMES DONELAN, M. B. R., Univ. Sr.—*Journ. L., R. et O.*, Jan., 1901.

A number of cases with this symptom are reported. While the repeated use of the stethoscope may not afford any evidence the laryngeal mirror will assist in making a diagnosis. The abnormal appearance of the subglottic vascular region on deep inspiration will attract the attention, even if no bleeding is going on. The best time for examination is when the attack is passing off and a little bleeding is still in evidence.

The treatment followed was that usually found efficient in pulmonary hemorrhage: Rest, opium and ergot or ergotin. Ice to suck was also given; after the acute attack, astringent sprays assisted in diminishing the volume of the vessels. Strychnia and cinchona internally.

M. D. LEDERMAN.

V. DIPHThERIA, THYROID GLAND, ESOPHAGUS, ETC.

Can the Period of Infectiveness of Diphtheria be Shortened and its Tendency to Spread Diminish?—WM. EWART (London)
—*Edin. Med. Journ.*, September, 1900.

The author advances a plea for a more thorough disinfection of the mouth and the upper-air passages both during the attack of diphtheria and in the convalescent stage. The nose and nasopharynx and the crypts of the tonsils are not readily accessible to the ordinary methods of disinfection which are carried in diphtheria cases. This should be done both during and after the attacks by sprays, irrigation or the introduction of vapors. The author employs carbolyzed oil in these cases, dropping it twice daily into the nose by means of a camel's hair brush. By throwing the head back, the oil diffuses itself more thoroughly over the mucous surfaces. The recesses of the tonsils should also be systematically cleaned out and the author proposes to practice massage of the tonsils in these cases for this purpose.

A. LOGAN TURNER.

Membranous Esophagitis; Expulsion of a Complete Cast of the Esophagus—NATHAN RAW—*Lancet*, January 5, 1901.

The patient was a heavy drinker, aged forty-six. After a violent fit of coughing, he vomited a complete cast of the esophagus, $8\frac{1}{2}$ inches long. The cast weighed $2\frac{1}{4}$ ounces, was of a dirty-greenish appearance, and was streaked with a purulent coating of blood-stained pus. The smell was most offensive, and some disinfectant had to be added at once. It had all the appearance of a complete esophagus, but on examination the muscular layer was not present. The patient coughed and vomited up a good deal of purulent matter, and seemed much relieved; but the pain on attempting to drink any fluid was so intense that he was afraid afterwards to try. He was fed on nutrient enemata for two or three weeks, when he

again was able to swallow some fluids without much pain, but was only able to get down a very small quantity at once. He was losing flesh rapidly, and it was quite evident that he had considerable stenosis of his gullet, and that it soon would be complete. Accordingly gastrotomy was performed.

The operation was quite successful, as the incision healed by first intention, and the sutures were removed on the eighth day. He recovered nicely for a time, and was able to feed himself regularly, but three weeks after the operation he commenced to regurgitate large quantities of gastric juice followed by the food in a form which, except for the curdling of milk, did not appear to be altered.

After-progress.—It was evident that, despite washing out his stomach regularly with an antiseptic and the most careful feeding, he was not able to digest food; and it occurred to the author that perhaps the mucous membrane of his stomach and intestine might be similarly affected. He was, in addition, fed per rectum, as he could not swallow at all, there being complete stenosis of the gullet. He accordingly slowly went downhill, and died from asthenia six weeks after the operation. His weight at death was eighty-seven pounds.

Necropsy.—A post-mortem examination was made twenty-four hours after death. The body was greatly emaciated. The digestive organs were removed *en masse* for careful examination. The stenosis of the esophagus was complete from the upper third right up to the pharynx. Below, down to the stomach, it would only admit a medium-sized catheter. There was no trace of any mucous lining anywhere, except near the cardiac end of the stomach, the cast having separated one inch above the entrance to the stomach. The stomach was small, and was firmly united to the skin wound. On opening it, one was particularly struck with the apparent absence of mucous membrane; the wall was almost smooth, and the rugæ were represented by indistinct lines; very little secreting surface was left, and that near the pylorus. There were no evidences of gastritis. The intestines were atrophied, and the mucous coat of the duodenum was smooth and thin, though otherwise healthy. There were no other symptoms of organic disease, except some brown atrophy of the heart.

The following description of the cast is by Dr. R. J. M. Buchanan, physician to the Stanley Hospital, Liverpool:

"The cast was in the form of a tube, $8\frac{1}{2}$ inches long, of a greenish-gray color, and with a smooth, but somewhat corrugated, external surface. The inner surface of the tube had the appearance of sloughing tissue, and it was ragged and undermined in comparison with the smooth outer surface. The cast was very tough and elastic; it was with difficulty that pieces could be cut from it for microscopical purposes. Portions of it were hardened and dehydrated in absolute alcohol passed through cedar oil and embedded in paraffin.

"Microscopical examination showed that the cast was a complete slough of the inner layers of the esophagus as far as the muscularis externa. The superficial epithelium had almost entirely disappeared in the deeper parts of the folds of the mucosa. A very few degenerated cells remained, which were scattered in patches. Small ulcerations of the mucosa, in the form of flask-shaped pits, were completely filled with micrococci and rod-shaped bacilli. The denser tissue immediately beneath the epithelial layer had retained its characteristic structure in parts, but was broken through by the small ulcerations extending from the surface. The remainder of the mucosa and submucosa was invaded by a fibrinous network, filling up the spaces between the degenerate fibrous tissue. This fibrinous network was similar in appearance to a diphtheritic membrane. Here and there could be recognized muscular fibers from the muscularis mucosa. The meshes of the network were crowded with leucocytes and rod-shaped bacilli, the latter very varied in shape, which had stained irregularly, similar to the diphtheria bacillus. Minute hemorrhagic extravasations from the vessels had evidently taken place at different times, and the remains lay scattered about. The blood vessels were blocked with thrombi, and the lymphatics were dilated with coagulated exudation. The condition revealed by microscopical examination is suggestive of a submucous dissecting cellulitis, leading to complete separation of the inner coats of the gullet."

Remarks by Dr. Nathan Raw.—The case seems to be unique in this country, the few others recorded having occurred in Germany and America. The cause in this case was neat spirits, of which the patient had taken a very large quantity, and yet at the necropsy no evidence of cirrhosis of any organ was observed. The disease had evidently not been confined to the mucous lining of the esophagus, but had attacked that of the stomach to a minor extent. With regard to the operation of gastrotomy, the author is inclined to think that Albert's method has no advantages over those of Howse or Witzel, and it is certainly much more difficult to perform, especially if, as in his case, the stomach is small and retracted.

STCLAIR THOMSON.

VI. EAR.

On the Different Methods of Measuring Hearing and on a Uniform Method of Recording the Results of the Functional Activity of the Ear—G. GRADENIGO—*La Parole*, 1900, No. 3.

The author refers to an article by Bonnier, which appeared in 1899 in No. 6 of the *Archives Internationales de Laryngologie*, which referred to the great necessity of establishing a uniform method for recording the functional examination of the ear, but which thought it necessary to abandon other diagnostic methods based only upon functional examination. The author persists in believing that in the majority of cases one can by simple functional ex-

amination establish whether the lesion affects the* apparatus of perception or that of the transmission of sounds.

He then defends his method of registration from the charges of being vague and complicated, and we must recognize indeed that it is simple, while it shows the simplest of the principal tests of hearing which are normally practiced. If any examiner thinks it necessary in a particular case to omit the P or the S, he has only to draw a line through it; if he thinks it well to omit the researches of the others or to limit it to one only, he can do it in the same way as one uses the temperature charts to indicate only the temperature, without taking note of the pulsation or respiration.

The author recognizes the obstacles which may be opposed to the adoption of a uniform method of measuring the hearing, but just for this reason he thinks it necessary to place the acquaintance of the functional condition of the ear, in comparison with the results from the different processes of examination. He discusses the importance of the tests with the watch, with the voice, with whistles, and with regard to the tests of duration of perception by a series of tuning-forks he affirms that if we may omit it in ordinary cases it is indispensable when we wish to establish a marked auditory defect in certain segments of the musical scale. He contests with reason* the advantage of substituting for the various sources of sound one single tuning-fork with a hundred double vibrations, because in the musical scale generally adopted a hundred double vibrations do not correspond to any well-defined note.

He demonstrates the superiority of his own method of testing the duration of the acoustic perception of the tuning-fork in comparison with the corresponding method of Bonnier and recognizes that both are based upon the classical ear method, used for many years in the laboratories, in the study of the method of vibration of tuning-forks. With regard to the functional elements that Bonnier thinks necessary to utilize in order to determine the acoustic index, the author observes that it has already been brought into prominence since 1893 by Corradi.

Further considerations lead him to the conclusion that the index proposed by Bonnier, if attractive for its simplicity, cannot furnish on the functional power of a diseased ear sufficient indications to be practically useful. G. FERRERI. (Translated by StClair Thomson.)

Removal of Foreign Bodies from the Auditory Canal—G. C.

SAVAGE (Nashville, Tenn.)—*Medicine*, February, 1901.

There is great danger of injury to the canal and drum membrane by unskillful attempts to remove foreign bodies. A stream of water directed toward the largest opening between the canal wall and the foreign body is considered the best means of removal. It is better to anesthetize nervous children. Inspissated cerumen may be softened in a few minutes by the use of hydrogen dioxide, when it may be washed away.

ANDREWS.

**Complete Ossiculectomy and Removal of Remains of Drumhead,
Larger Ossicles and Outer Attic Wall in Chronic Otitis
Media**—R. LAKE—*Lancet*, March 10, 1900.

Removal of the remains of the tympanic membrane and of the larger ossicles has been a recognized mode of treatment for chronic suppurative disease of the middle ear for some considerable time. The results of Continental surgeons have been reported, and at various times papers have appeared in this country, of which one by Mr. A. Cheatle is fresh in the minds of many as a particularly useful expression of the opinions of a number of leading specialists at home and abroad. In none of the papers which have appeared of recent years is there any tabular list of cases by which one can estimate either the value of the operation or the class of cases for which it should be done or its results as regards the hearing power.

The table which accompanies this note shows some of these points. Thus, it is seen to be a very successful operation, that it is entirely free from danger to health, and finally that the hearing is often improved, and rarely if ever diminished. It is not all cases of suppurative otitis media that yield to the operation. Unfortunately, many require the radical operation, foremost amongst these being those accompanied by cholesteatomata of the attic and cases of destruction of the wall of the meatus in the posterior surface. In these cases the surgeon should perform this operation, following it up later with the larger one should it prove insufficient.

The indications for the operation appear to be divisible into two main subdivisions—those for the cure of chronic suppurative otitis and those for the improvement of hearing after the cessation of discharge. It is difficult, and indeed impossible, to place any time-limit as to how long chronic otitis media suppurativa will remain harmless even when unaccompanied by any other symptoms. As a general guide, one may say that this duration is directly affected by the effects of treatment and by the situation of the perforation. An uncomplicated otorrhea which has resisted all forms of treatment for six months is certainly a case for ossiculectomy. This becomes more imperative when the perforation is situated in the attic or upper posterior segment of the drumhead.

The indications for the operation are briefly as follows: 1. Intractable disease of the attic with a perforation in Shrapnell's membrane, especially if accompanied by definite caries or deafness. 2. Intractable disease with perforation in the posterior superior quadrant. 3. Intractable disease with considerable destruction of the membrane in any other situation. 4. Residual deafness after suppuration without nerve deafness. Any more serious condition becomes a case for the radical operation, but in the foregoing there is justification for attempting to avoid more serious measures. The operation itself is so well known and so clearly described in text-books that all the writer adds is to emphasize the necessity of removing the anterior attic wall. This

may be done with any of the cutting forceps, as Krause's, or by means of Cheate's burr, which enables a more radical operation to be done. The use of the author's crotchet-shaped curettes, which were first recommended by him in 1896 as a means of removing the incus and clearing out from the attic granulation tissue and detritus, has much simplified the hitherto difficult task of removal of the incus. By its use the smallest particle of a necrotic incus can be removed with certainty from the iter ad antrum. The instrument in question, of which an illustration is given, is introduced into the attic after removing the malleus; it thus occupies the place vacated by the head of that bone. The handle is then rotated forwards and grips the incus or what remains of it, and by a forward and downward motion the bone is either dislocated into the tympanum or brought out in the loop of the instrument. As a last precaution the cavity is thoroughly cleansed with Lister's strong solution (1 in 20 carbolic, with corrosive sublimate added in the strength of 1 to 500).

These fifty cases are almost equally divided amongst the sexes, but nothing can be deduced from that fact, as the proportion of otorrheas in the sexes is fairly equal. As to cure, no less than forty-two were cured, although three had temporary relapses, and in several of the remaining eight the patients disappeared before a cure was effected, and some may now be well if all are not. Improvement was noted in the hearing power in twenty-one cases. In three cases hearing returned to normal, in four, it was very much improved, and in the remaining fourteen the improvement was sufficient to be appreciated by the patients and their friends, and was demonstrated as well by careful tests. The right ear was the seat of disease in twenty-nine cases, and the left in twenty-one cases. The average age of the patient was 22.4 years, and the average duration of the disease was thirteen years. From this table can be derived information on all points save as to the time that should be allowed to pass before taking some radical step to check the disease, and the surgeon must rely upon his own judgment in this matter rather than upon any written rule.

STCLAIR THOMSON.

VII. MASTOID AND CEREBRAL COMPLICATIONS.

Practical Points in the Diagnosis and Treatment of Otitic Pyemia

—DUNDAS GRANT—*Journ. Laryngol.*, October, 1900.

When in the course of acute or chronic suppurative otitis media the patient is attacked with rigors and oscillations of temperature, we may safely assume that we have to deal with otitic pyemia in some form. If a continuous high temperature persists, in spite of a free exit for the discharge, together with a rapid and intense lowering of the vital power, a more purely septicemic process is in action.

Other diseases of an infectious nature may also account for the pyrexia and constitutional disturbance. The author here details some points in the differential diagnosis. Among the chief sequelæ which may appear in the course of a suppurative otitis media are extradural abscess, purulent meningitis, serous meningitis, cerebral and cerebellar abscess. The symptoms of these complications are described rather briefly, and thrombo-phlebitis is also considered.

Expectant treatment is condemned. To counteract the toxic effect of the streptococcus or its products, injections of anti-streptococci serum may be made, and when the septicemia persists after complete evacuation of all sources of infection, the serum is our only resource. Radical surgical measures are recommended in the above complications.

M. D. LEDERMAN.

A Case of Mastoid Abscess; Recovery Without Operation—J.

D. HARRIGAN—*N. Y. Med. Journ.*, November 10, 1900.

The abscess followed a suppurative otitis media. Cessation of the aural discharge, the pain and swelling behind the ear became exaggerated. This condition continued for some time, and when the author saw the patient, the parents pleaded for palliative treatment without operation, though the latter was advised. Cleansing the ear with peroxide and poulticing the mastoid was the treatment carried out, which resulted in a cure.

(Such a course of treatment is certainly contraindicated where the condition is brought about by retarded drainage. If the perforation in the membrana is small, and peroxide of hydrogen decomposes the pus in the canal or middle ear the small opening in the drum is furthermore occluded, and the natural exit for drainage is closed.)

M. D. LEDERMAN.

Cholesteatoma of the Temporal Bone and its Treatment—H. J.

WARING (London)—*Edin. Med. Journ.*, February, 1901.

After defining cholesteatoma as a tumor composed of a mass of squamous epithelial cells and after describing the situation and origin of these masses the author recounts two cases.

In case one the tumor was of primary origin; that is, had arisen in connection with some epithelial process within the tympanum, the tympanic membrane being intact. The large cavity which contained the epithelial mass was opened from behind, scraped out, irrigated for some weeks and after being rendered sterile was filled with strips of bone and cartilage taken from the limbs of a kitten. Two years after the operation the patient remained well, the cavity in the bone no longer existing.

The second case was a cholesteatoma of secondary origin, associated with chronic middle-ear suppuration. A similar operation to the first was attempted, but owing to the difficulty in making the cavity aseptic, the bone grafts did not take. Mr. Ballance's skin-grafting operation was then performed with a moderately good result.

A. LOGAN TURNER.

VIII. THERAPY.

Four Phthical Remedies which have Proved Most Valuable in the Author's Experience—THOS. J. MAYS, A. M.—*The Pennsylvania Medical Journal*, December, 1900.

The author describes at considerable length the four good remedies, viz.: Rest, food, strychnine and counter-irritation over the vagi in the neck in the treatment of phthisis. Of rest, the author states the value of this remedy is best realized when we acknowledge the fact that phthisis is essentially a state of exhaustion. Food is the medium through which the consumptive's physiological capital is increased. The best are those which contain the greatest amount of concentrated nutritive material in the smallest bulk, and which require the least expenditure of vital force in their digestion, such as beef juice, roasted lamb, eggs, etc. Strychnine the author considers one of the most valuable drugs in the treatment of phthisis, on account of the special elective action on the whole nervous system, and particularly on the part distributed to the pulmonary organs.

The author speaks very highly of the counter-irritation over the vagi in the neck by the hypodermic injection of silver nitrate over the vagi in the region of the neck.

E. D. LEDERMAN.

Extract of Suprarenal Capsules in the Treatment of Diseases of the Nose, Throat and Ears—E. B. GLEASON—*Internat. Med. Mag.*, November, 1900.

The author's experience has been that while the use of this remedy within the nose will often render operations bloodless, it is a mistake to suppose that its use will prevent hemorrhage from a large artery within the nose should such a vessel be severed. He has had profuse hemorrhage during a nasal operation performed after the most thorough application of the extract.

It may be used in acute nasal catarrh after the congestion and swelling have been reduced by cocaine, but the author thinks it probable that it is inferior to a four per cent solution of antipyrine, which, if liberally sprayed over the mucous membrane, will maintain the contractile effects of the cocaine for several hours and prevent any reaction.

He commends its internal and local use in hay fever. EATON.

X. MISCELLANEOUS.

Report of a Case of Restored Speech and Hearing Due to a Fall from a Height—*Pennsylvania Med. Journ.*, August, 1900.

When ten years of age, the patient, a male, sixty-nine years old at time of admission to hospital, had small-pox, which left him with a chronic suppurative otitis of both ears. Hearing was entirely lost, though speech continued for two years, when he gradually lost this faculty and became a deaf-mute. His health remained good.

While repairing his home he fell from a step-ladder to the ground, and was found unconscious, and remained so for some time.

While going to the hospital he started to ask where he was being taken, and on being asked his name, gave another one instead of his own.

It was the first time in fifty years that he heard his own voice. The improvement in hearing is confined to one ear; the other is totally deaf.

M. D. LEDERMAN.

Mouth-Breathing and Its Relation to Diseases of the Throat,

Ear, Nose and Accessory Cavities—MAYO COLLIER, M. S., F.

R. C. S.—*Journal L., R. et O.*, January, 1901. .

In a very interesting and practical paper upon this subject the author vividly describes the functions performed by the nasal organ. He remarks that mouth-breathing, if persisted in, even in the hypothetical condition of a healthy and patent nose, would ultimately induce anterior nasal obstruction from atrophy following disuse of the nasal valve. This would be followed by engorgement of the lining membrane of the nose and accessory cavities from vascular dilatation, thus lessening the capacity of the nasal respiratory tract, so maintaining the obstruction and continuing the mouth-breathing.

This relaxation of vaso-motor tone and subsequent hypertrophy is the principal factor in the great majority of cases of nasal obstruction.

The same state of affairs exists in the Eustachian canal and middle ear, and the first step in the right direction in the treatment of the throat, ear and adjacent cavities is to establish free æration of the nose.

M. D. LEDERMAN.

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***Cholesteatoma of the Temporal Bone and Its Treatment.** H. J. WARING, F.R.C.S. *Edinburgh Med. Journ.*, February, 1901.

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Results of Thirty-five Prophylactic Injections of the Anti-diphtheritic Serum. PERCY R. BLAKE. *Lancet*, p. 247, January 26, 1901.

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***On Post-Influenzal Tracheal Hemorrhage.** JAMES DONEGAN. *Journ. Laryngol.*, January, 1901.

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The Present State of Otology in Great Britain. GRUNERT. *Lancet*, December 22, 1900.

***Mouth-Breathing and Its Relation to Diseases of the Throat, Ear, Nose and Accessory Cavities.** MAYO COLLIER, M. S., F. R. C. S. *Journ. Laryngol.*, January, 1901.

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***Two Cases of Asthma Associated with and Apparently Dependent Upon the Presence of Nasal Polypi.** WALKER DOWNIE (Glasgow). *Glasgow Med. Journ.*, October, 1900.

The Throat and Nose in Scarlet Fever. W. CHEATHAM. *Louisville Monthly Journ. of Med. and Surg.*, March, 1901.

BOOK REVIEWS.

Le Pharynx. Anatomie et Physiologie. (Anatomy and Physiology of the Pharynx). By C. CHAUVÉAU. With 165 illustrations. Paris: Librairie J. B. Baillière et Fils. 19 Rue Hautefeuille. 1901.

We are a little alarmed at noting that this octavo book of four hundred pages is only the first of four volumes to be devoted entirely to the pharynx. The present work is completely given up to the anatomy and physiology of the region. The second volume will deal with examination, pathology and general therapeutics; while the two last volumes will be devoted to medical and surgical considerations. Such a programme fills us with awe and consternation, for at this rate we may find ourselves, in a few years, compelled to wade through eight volumes on the larynx and possibly a dozen on the nose!

We would beg writers who think of keeping up this length of literature to remember the saying of Hippocrates, which is now truer than ever it was: "*Ars longa, vita brevis.*"

While trusting that few will attempt to rival Dr. Chauveau we must heartily accord him our admiration and congratulations on the work he has produced. The list of literature which he has consulted alone covers more than thirty pages, and the whole subject of the anatomy and physiology of the pharynx is treated with a thoroughness which is not to be found elsewhere. The author would hardly expect us to recommend his book as one to be read through lightly, but as a book of reference it is certain to take a prominent place in the library of the specialist.

STCLAIR THOMSON.

Maladies du Pharynx. (A Treatise on Diseases of the Pharynx). By E. ESCAT. Paris: G. Carré & C. Naud, Publishers, 3 Rue Racine. 1901. Price, 16 francs.

The author of this handsome volume is already well known by his numerous contributions to the literature of the specialty. These have been characterized by their originality as well as by the breadth of view of the writer, and the work before us shows the advantages which accrue to a practitioner in a provincial center and which help to balance the gains of living in a large city. In the latter the field of the specialist tends to get more and more restricted, so that his interests and studies are concentrated in advancing a few well worn subjects. It is evident that Dr. Escat, in his practice at Toulouse, has opportunities of studying diseases and performing operations which, in a capital, are scattered amongst other hands besides those of the laryngologist. The circumstances also necessitate a resourcefulness and originality of idea which are often wanting in those who can share their responsibility, or who are hampered by the traditions of the schools.

As might be expected, the text is not burdened with numerous references, or by the discussion of opposing views. It is well written, well arranged, and illustrated by several new, original and really helpful illustrations. As in many French works the subject of tonsillitis is treated with a fullness to which we are not accustomed, and if the classification and subdivision of all the varieties of angina do not meet with general approval, at least the description will arouse considerable interest.

We should hardly have thought that pharyngeal diseases would have warranted a large volume in 8vo of 576 pages and 150 illustrations. However, a perusal of Dr. Escat's book has convinced us that he is amply justified by the result. It should appeal to family physicians, who generally see the first stage of pharyngeal affections and frequently the whole course; but laryngologists will not fail to derive pleasure and profit from these well-written pages. The author might well have adopted the motto of Moritz Schmidt, "*Aus der Praxis für die Praxis.*"

The treatise is preceded by an interesting preface by Lubet-Barbon.

STCLAIR THOMSON.

De la Frequence de l'Empyeme des Cavités Accessoires du Nez (Recherches Anatomo-Pathologiques). On the Frequency with which Empyema Occurs in the Accessory Sinuses of the Nose. (Pathological and Clinical Observations.) By DR. FERNAND MARTIN, Paris; M. Masson, 120 Boulevard St. Germain. 1900.

Suppuration in the accessory cavities of the nose is no longer a rare affection. At the same time a study of the statistics of most throat hospitals will indicate that it is not amongst the commonest of the ailments we have to treat. In Chiari's clinic the annual report showed that empyema occurred in 1.97 per cent of the cases treated; whereas the post-mortem examinations of E. Fraenkel revealed a latent empyema in 43.15 per cent of the cadavers he opened. This striking contrast between the figures of the clinic and the post-mortem room is confirmed by the researches of Harke and Lapalle, who both came to the conclusion that a very large percentage of latent empyemata escape detection during life. The work of these observers is excellently summarized in the thesis before us, and is carried a step further by the statistics which Dr. Martin has obtained from Lichtwitz's clinic and from thirty-one complete autopsies which he has himself performed. His conclusions are as follows:

"1. To determine the frequency with which chronic suppuration occurs in the accessory cavities we must compare the statistics of the clinic with those of the post-mortem theater.

"2. In examining the sinuses in the cadaver the best method of opening them is that of Harke, which is well described and illustrated in this brochure.

We have the results of three different sets of post-mortem statistics in regard to empyema:

(a) Harke found 116 cases of sinusitis in 400 cadavers.

(b) Fraenkel found 63 cases of sinusitis in 146 cadavers.

(c) Lapalle and Martin found 70 cases of sinusitis in 200 autopsies.

"3. Except for the summary statistics of Chiari's clinic, published by Fein, the only complete figures showing the frequency of empyema in the living subject are those of Lichtwitz. Amidst 12,000 patients attending his practice he diagnosed 243 cases of sinusitis.

"4. A comparison of these figures shows that sinusitis is met with fifteen times more frequently in the cadaver than in the living subject.

"5. The cause of this disproportion is due to the fact that one has rarely occasion to diagnose an empyema on the living subject. Either the sinusitis is not severe and escapes notice as an ordinary 'cold in the head,' or it is overlooked from being overshadowed by the symptoms of the acute pyrexia with which it is associated. If chronic, the sinusitis causes so few symptoms that the patient's attention is hardly drawn to it. To these causes must be added the fact that there is considerable difficulty in diagnosing any empyema except that of the maxillary antrum."

We would venture to suggest yet another cause of this striking disproportion, and that is that in many of these cadavers the suppuration in an accessory cavity might have only been developed during the last illness of the subject—pneumonia, enteric fever, or what not—and, therefore, have not even existed previously. Besides, we are inclined to think that in many of the post-mortem records a collection of any sort is often put down as an empyema which a more dispassionate view of the subject would have disregarded. Still, even allowing, for this, there can be little doubt that the moral of these researches is that in all our clinics many a case of chronic nasal suppuration is overlooked and not traced to its true origin in one of the accessory cavities. A perusal of this excellent thesis of Dr. Martin should inspire us to examine our patients once and again before giving an off-hand diagnosis of "catarrh," or condemning them with the dread word "ozena." The clinical observations on latent empyema are scattered broadcast in literature, but in this small brochure we can easily refer to all the autopsies which bear statistically on the subject. We are indebted not only to the author, but also to Dr. Lichtwitz who has done so much for this department of rhinology and who inspired his pupil's *thèse*.

STCLAIR THOMSON.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

THE PATHOLOGY OF PHARYNGOMYCOSIS, WITH LANTERN SLIDE ILLUSTRATION.*

BY D. BRADEN KYLE, M.D., PHILADELPHIA, PA.

The literature on the subject of pharyngomycosis as a true mycosis, due to some form of fungi, is well known, and this paper will not be burdened with long quotations, the reader being referred to the original literature. The total number of cases now reported has become so large as to necessitate the disuse of the term "a rare disease."

Prior to 1886 the subject was treated by Tilley, Gruening and J. Solis-Cohen. From 1886 to 1898 Toeplitz' article gives a complete review of all cases reported and reference to his article is all that is necessary, only cases illustrating the various views of different writers or showing peculiar characteristics being quoted. Later important clinical contributions were given by Van der Poel, Newcomb, Knight, Hemenway, Ingals, Dunn and Campbell. Jonathan Wright and Heryng have considered the subject pathologically and have furnished specimens.

A number of mycotic affections of the aural and pharyngeal cavities have been studied. Morrell Mackenzie describes mycosis in his text-book as a follicular exudative pharyngitis, and Stoerk as seborrhea of the follicular glands. A careful survey of the literature shows that individual writers have in almost every case set forth some different idea as to the etiology and pathology, which only proves that there is yet uncertainty as to these points. Lincoln, in

* Read before the New York Academy of Medicine, October 24, 1900.

his report of cases, believes it to be due to the leptothrix. Sections examined by Wright showed the presence of the leptothrix as well as keratosis. Schmiegelow believes the disease to be due to the leptothrix. Numerous forms of mycosis have been described by various authors. It may be that instead of numerous forms they are separate diseases. Possibly certain diseases similar to this are due to the presence of the leptothrix, but there surely is a disease not dependent upon that organism. In this belief I am in accord with Brown-Kelly's views. As a rule the disease is limited to the pharyngeal and tonsillar structure; however, occasional cases have been reported, one by Wright and one by Dunn, in which the naso-pharynx was involved. This may be due to the peculiar lymphatic and vascular supply in some individuals. Gray reports a case of mycosis of the larynx in which the deposit was on the upper surface of the left arytenoid.

Biesiadeki, of Krakow, believed, on account of the iodine reaction of the removed portion, that amyloid degeneration of the mucous glands occurred. Stoerk found calcareous deposits. Infiltrations, however, are likely to occur associated with degeneration and it is not unlikely that in Stoerk's case this had taken place and the concretion was a secondary formation and not a causal factor. Rokitsansky classified the disease among the atheromata similar to the change occurring in the skin; in fact, a hardening or keratosis. In the majority of cases reported the leptothrix was present, but there were also a number of cases reported in which the leptothrix could not be demonstrated.

Toeplitz believes the disease readily follows tonsillitis and diphtheria. This does not seem to be true in all cases, at least the disease occurs so many years after diphtheria or an attack of tonsillitis as to preclude any etiological relation. Baber and Farre report cases in which the palate and base of the tongue were affected, as well as the tonsils. Labit reports a case in which the condition was present in the nose. Hemenway is not a believer that pharyngomycosis is due to the leptothrix, while Schmiegelow is a firm believer in the leptothrix as an etiological factor. Such men as Klebs classify the leptothrix buccalis with the algæ. The tendency of the disease to recur favors both bacterial infection and a specific inflammatory process. If the disease is due to the leptothrix, it seems reasonable to suppose that there would be some inflammatory action present at the site of infection, yet most writers agree that none exists.

Wright shows from sections examined that the leptothrix grows in the crypts of the lymphoid tissue and also can be demonstrated in the acini of the racemose glands. In the same article he gives practically nothing as to the change of tissue, the entire work being devoted to the bacteria present.

Goodale, of Boston, in his admirable article in the *Annals of Otology, Rhinology and Laryngology*, February, 1900, on the Pathological Histology of Hyperkeratosis Lingualis, describes the tissue change quite similar to that shown in the lantern slides, which supports the theory of Siebenmann and Richardson. He states that the condition resembles very much that of chronic inflammation with secondary alteration of the epithelial cells. This condition, however, as shown by the lantern slides, I believe to resemble more a chronic specific inflammation than a simple chronic inflammation. Some writers recognize the acute and chronic forms of mycosis and while it is altogether probable, I think possibly the various forms described are only different stages of the same pathological alteration.

Siebenmann was the first, I believe, to combat the theory that pharyngomycosis was due to the leptothrix, although his work was originally done on sections of the diseased tissue from the tonsil. From a study of these sections he described the disease as one of keratosis and was afterward supported in his views by Richardson, of Washington, Brown-Kelly, of Glasgow, and Goodale, of Boston.

There seems to be some difference of opinion as to the degree of keratosis and also the degree of subepithelial change. This difference of opinion may be due to the fact that in individual cases examined the pathological alteration was in different stages of progress. While the lantern slides shown differ somewhat in pathological alteration from that described by Siebenmann and others, yet the general theory is the same and I believe the presence of the leptothrix or any bacteria is secondary and not an etiological factor. In a case reported by James P. Tuttle a microscopic examination of the tissue largely confirmed the theory of Siebenmann and is practically the same as shown in the lantern slides, although his sections showed subepithelial myxomatous degeneration instead of hyaline.

Brown-Kelly states, the objects of writing his paper are :

1. To adduce further proof in support of Siebenmann's statement that the disease commonly known as mycosis leptothricia is in reality a keratosis.

2. To prove that this keratosis is more extensive than Siebenmann states and that the name hyperkeratosis lacunaris does not adequately describe the phenomena observed. A less special term, such as keratosis pharyngis, is therefore proposed.

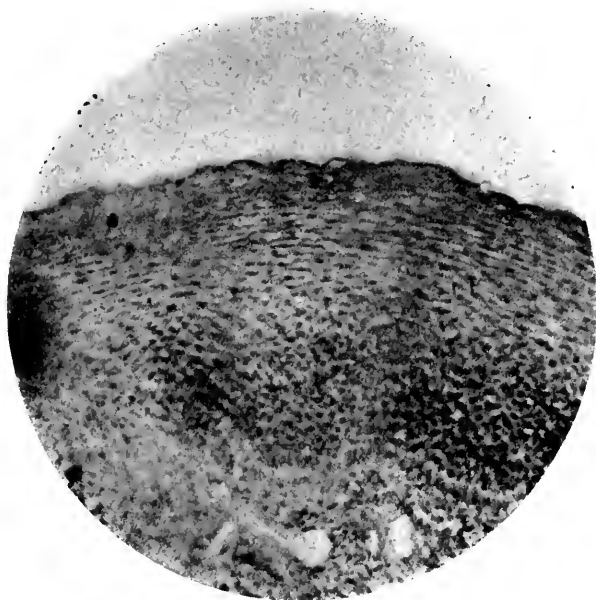
3. To point out that a condition does exist which may justly be termed mycosis pharyngis leptothricia, but which is quite distinct from the affection at present bearing that name.

He then describes the frequency of the disease in which he says that almost half of the papers published on this subject are based on the observation of a single case, only in a few instances does the number recorded exceed a half dozen. The author also describes in detail the aspect, site, symptoms, course, etiology, pathology, etc., of the disease. He describes under the head of Course the interesting fact that he has been able to verify the origin of the tufts, described by Siebenmann, of small white submucous spots, and also if left to themselves they eventually disappear. He also observes that whilst leptothrix is usually to be found in lingual and faucial tufts, they are absent in the pharyngeal excrescences. The author describes ten cases which have come under his own observation. These papers were contributed to the *Glasgow Medical Journal* of August, September and October, 1896.

Most authorities have laid the principal stress on finding leptothrix and not attaching so much importance to the condition of the epithelium and submucosa. Heryng found that the majority of the excrescences projected from a flake-like pavement epithelium. The masses were of a yellowish color and finely granular in character, more or less transparent. He differentiates between two kinds of grafts or projections. The superficial or first kind are cup-like and are adherent to the mucous membrane and stand out in strate-like horny epithelium. In the middle the mass was compact and on the sides radiating filamentous projections. The second form consists of wedge-shaped and triangular projections which extend quite deeply into the parenchymatous coats. These forms have a uniform glassy yellow appearance. The masses are larger and entangled*with epithelial plates and granular debris. The upper layer consists of finely granular masses, but no leptothrix.

In lantern slide No. 9, in fact nearly all the lantern slides in a general way agree with his description of the tissue, pigment granules being present, the kerato-hyaline disseminating throughout the structure. While kerato-hyaline is normally present in

the section of mucous membrane, it is in a very limited amount and is not so easily demonstrated. Heryng called attention to the fact that the submucous masses resembled very much the pulp of a hair. This is well illustrated in lantern slide No. 9, and is due to the fact, I think, that the papillary layer which has shoved up through the mucous membrane at that point has undergone cornification with some hyaline change. The change in the epithelial cells of course depends somewhat on the variety of epithelium. The pavement epithelium hardens much more readily



than the cylindrical epithelium. The posterior wall of the pharynx contains more pavement epithelium than the lateral walls or tonsillar surface.

Text-books and various authors would lead us to believe that the affection occurs most frequently in young and middle aged females, but I think age and sex have very little influence. The disease is generally unobserved or discovered by accident. Later a hoarseness and tickling sensation may be felt in the throat. Numerous whitish, more or less hard, excrescences appear slowly,

mostly occurring at the base of the tongue, on the tonsils and in the solitary follicles on the posterior pharynx. Very seldom on the aryepiglottic folds, the laryngeal surface of the epiglottis and the mucous membrane of the tonsils. Frequently the disease is associated with dental caries, cutaneous diseases and unhealthy surroundings.

Climatic conditions seem to have considerable effect on this disease. This, of course, in a measure supports the bacterial theory, yet climatic conditions in a great measure control many patholog-



ical alterations by their good or bad effect on the general health, rendering cell resistance greater or lesser, according to the climatic conditions to which the individual is subjected.

General systemic condition does not seem to be such an important factor, as reported cases show robust health as well as asthenic conditions. The disease does not seem to be associated with syphilis or tuberculosis. In the case reported by Gray, of Glasgow, he described the larynx as appearing exactly like that of tuberculosis without any of the clinical symptoms. In Gray's case there seemed to be no other lesion than that of the larynx, which is rather unusual.

From a careful review of the literature of the subject the disease is not uncommon, although I have seen only ten cases. The common site, however, seems to be on the tonsil, or the pharyngeal wall bordering on the tonsil. It is rarely limited to the pharyngeal surface, as was the case from which these sections were made.

The history of the case from which these slides were taken is very brief. A young man in excellent health, twenty-four years of age. His attention was called to his pharynx, as he described it, "by a sensation of dry spots," and on swallowing he said the



back part of his throat felt stiff and seemed to pull. This symptom is possibly explained by the fact that the pharynx was dotted over by some twelve or fifteen of these minute areas and on account of the involvement of the submucosa the membrane was fixed or anchored at each individual nodule which lessened the resiliency of the mucous membrane. There was no pain nor alteration in the voice. His previous history was negative.

As to the import of the leptothrix from an etiological standpoint, I am inclined to the view that its action is secondary, and I think that it is more than likely that the chemical change brought about

by the pathological alteration in the submucosa causes a change in the glandular secretion and forms a soil which is a suitable nidus for the proliferation of certain bacteria. It is true, bacteria may cause this alteration; however, if that was the causal factor in this disease I think that the section instead of showing the primary lesion in the submucosa would show a superficial primary alteration with secondary involvement of the deeper structures.

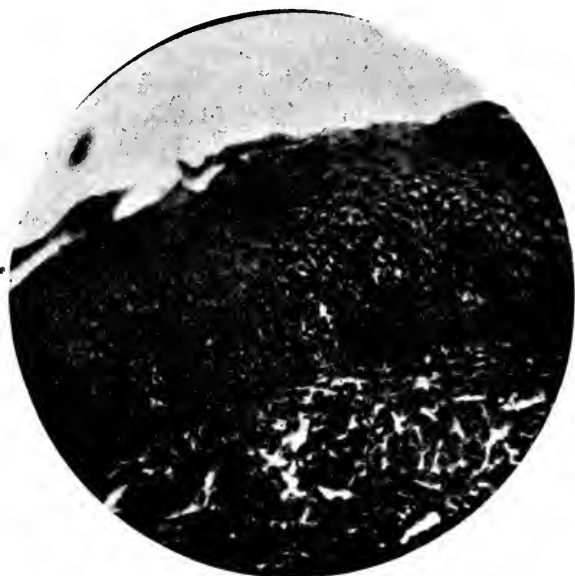
From the sections illustrated by lantern slides the degenerative change seems to be largely hyaline. The process of degeneration



is controlled by nutrition and why we have hyaline degeneration in one condition and fatty in another can only be explained from the standpoint of chemical pathology. That the tissues and fluids under certain chemical conditions bring about definite pathological changes is governed by the same general laws controlling chemical reaction.

Bacteriologists differ as to the classification of the leptothrix, whether it belongs to the algae or schizomycetes; it more properly belongs to the blastomycetes.

Bacteria of the throat, found present in diseased conditions may be only associated etiological factors. In mycosis where so many bacteria are found present their import is lessened. The life and growth of the bacteria is largely determined by the character of the secretion. It may be possible that owing to the peculiar chemical change in the tissue requisite to the pathological alteration, as shown in mycosis so-called, the chemistry of the secretion is suitable to the growth of the leptothrix.



While no culture inoculations were taken from this case, yet the specimen was set in formalin and stained specially for the various forms of bacteria. While many bacteria were demonstrated on the surface and entangled in the loosened epithelial debris, yet the subepithelial cells showed no alteration significant of bacterial infection. The rod-shaped leptothrix were not demonstrated, simply the budding form of the yeast fungi of the blastomycetes genus. Laboratory investigation to show the disease-producing power of the leptothrix has given negative results. Michelson inoculated rabbits with pure cultures of leptothrix without effect. Heryng has inoculated the conjunctiva and dorsal skin of rabbits with the leptothrix.

thrix, but without success. Seibert has, however, succeeded in producing severe suppuration by inoculating the cornea. This is questionable because the leptothrix does not belong to the pus-producing microorganism class. And then the pus might have been due to an accidental infection. Miller has demonstrated the presence of the leptothrix in the tartar on the teeth of Egyptian mummies. It has also been demonstrated in pulmonary gangrene. The sarcinae are found present as well as the *oidium albicans*, *saccharomycetes*, *leptothrix maxima* or *bacillus buccalis*, the *aspergillus fumigatus*. The *leptothrix buccalis* and the *bacillus fasciculatus* are the fungi usually found in the surface deposits.

From my own bacteriological investigations, some five hundred, in which pathogenic and non-pathogenic bacteria have been found in diseased and healthy mucous membrane surfaces, I am inclined to think that the bacteria present are largely secondary and their causal or etiological relation to disease is controlled by the chemical reaction of the tissue and secretions.

In some of the cases of keratosis reported the presence of the leptothrix has also been demonstrated. In other cases with precisely the same pathological alteration no leptothrix have been found. If the disease is due to any form of bacteria, that bacteria evidently produces no toxins, as is shown by the absence of clinical phenomena. The yeast fungi and mold fungi do not produce toxins which produce systemic poisons. If, then, the disease is due to the leptothrix this would account for the absence of systemic symptoms. From a pathological standpoint the tissue change outside of bacterial infection is so localized and limited as to not produce any systemic effects from ptomain or leukomain poisoning. The reaction of the gland secretion of the mouth does not seem to have any effect on the disease. This is against the bacterial theory, as with one or two exceptions the pathogenic bacteria require an alkaline media, acid secretions retarding their growth or causing death of the germ.

From the standpoint of treatment it is a well-known fact that the local application of various medicinal agents, germicidal and otherwise, have very little therapeutic effect. This may be explained by the fact that from the process of keratosis and subepithelial change the lymphatic channels are closed or destroyed and the solution does not penetrate the tissue.

The fact that several individuals in the same family have developed the disease may be somewhat in favor of the bacterial theory, at the same time the same individuals exposed to similar conditions might bring about the same pathological alteration in tissue, and that if

the disease is infectious and conveyed from one to the other why is it not commonly seen in the nasal or other mucous membranes? I believe that in some way it is particularly related to the lymphatic system, which is as you know rather peculiar in the pharyngeal and tonsillar tissues, and it is a curious fact that this disease is usually limited to these and adjacent structures. The peculiar vascular and lymphatic circulation of these parts is clearly shown by the selective action of certain drugs as belladonna and aconite.

From the slides presented it looks as though whatever the pathologic change may be, that it does begin from below and extend upward. The keratosis of the epithelial structure, whether it be due to some bacterial irritation as the causal factor or whether it be associated with some subepithelial change, at least is dependent upon the subepithelial structure and the degenerative process which takes place, as shown in the section, directly beneath the thickened areas on the epithelial surface seem to affect these nodules, which I think furnishes fairly reasonable grounds for the deduction that the epithelial alteration is dependent upon the subepithelial change. It seems to be somewhat like the specific inflammatory processes where there is cell proliferation, but where nutrition fails and it does not go on to complete organization and in this case goes on to cornification. Some portions of the section show the thickened blood vessel with proliferation of the endothelial lining of the vessel walls. From the symptoms usually described in this disease, a feeling of stiffness in the throat, I believe owing to the fact that the separate nodules are anchored, as it were, to the definite spot, interfere with the elasticity of the membrane, also proves these subepithelial connective tissue changes.

The peculiar fibrous bands, as shown in slide No. 10, is a rather unusual formation extending as it does from the subepithelial structure penetrating and obliterating the basement membrane and extending out directly to the epithelial surface is most likely organized connective tissue papillæ which have pushed up through the epithelial layer and cornified on the surface as it continues along the entire surface of the section and looks like an organized fibrinous exudate. The subepithelial lymphoid structure shows slightly water-soaked cells as would be found where there is a very mild edema. That there is very little inflammatory process is shown by the polymorphous nuclear leucocytes. Many large polymorphous lymphoid cells show chromatin scattered throughout the cells. The tissue also shows many inclusion cells and the cell is filled with chromatin. The subepithelial cells, which seem to bud

or shoot up through the connective tissue, show peculiar nuclear change. Siebenmann describes non-nuclear cells, while I find none resembling the cells described by him except those which are undergoing hyaline change. Those prolongations from below, namely, the papillary budding from the connective tissue structure, is seen in normal histological sections of mucous membrane of the pharynx and upper respiratory and alimentary tracts.

Clarkson in his normal histology says the superficial epithelial cells are for the most part non-nucleated periplasts enclosing a homogeneous substance, keratin, into which the original protoplasm of the cell has been converted. Between the superficial flattened squames, of which there are several layers, and the deepest germinal layer, the cells have an intermediate character. The presence of keratin in this cornified tissue and the cells beneath is not necessarily significant, as it is present in the normal structure and is the basis of horny tissue. No doubt the decomposed keratin has something to do with the peculiar reaction of the tissue to stain, as keratin is a complex substance which, when decomposed, yields leucin and tyrosin. When pathologically altered it would no doubt give a different chemical reaction to stain. Besides the resemblance to chronic specific disease there is also a marked resemblance to the disease known as Paget's disease of the nipple. While to be sure one is a disease involving the skin epithelium and the other a disease involving the mucous membrane epithelium, yet the physiological and histological law controlling these structures is largely the same. The similarity of the surface keratosis, the peculiar subepithelial connective tissue alteration is strikingly similar as compared with carcinoma. It looks as though in one case the epithelial cells grew and penetrated down into the tissue, while in the other the tendency is toward the surface. The card illustration taken from the case quoted by Dr. Coplin, as well as an illustration in Hamilton's Pathology, Vol. ii., page 804, Fig. 500, show the marked similarity in the pathological alteration. This disease also shows a peculiar hyaline degeneration as shown in the sections illustrated by lantern slides. Indeed, some of the cells under higher magnification show that peculiar intercellular change quite similar to that described in Paget's disease by Whickham and Hamilton.

The gentian violet stain brings out the keratohyaline material, as shown in lantern slide No. 9, as a rose-pink color. These masses of keratinized epithelium are really pushed up from below penetrating the basement membrane. In other instances, as shown in lantern slide No. 3, the change has involved the entire epithelial surface as

to denude the papillæ of the connective tissue. The yellowish-white areas are due to hyaline degeneration. The reaction to stain giving the various colors is controlled by the stage of degeneration.

In some of the sections an unusual condition is presented, that of areas of focal necrosis. This may be explained in two ways; it will be noted in the section that the area is almost midway between the basement membrane and the epithelial surface, and must be either due to localized areas of infection followed by liquefaction necrosis or else due to irregularity in the hardening process in which the cell cut off its own nutrition and has undergone liquefaction necrosis.

Hyaline change is also shown in the wall of the blood vessel and in the connective tissue papillæ. In several sections, as in lantern slide No. 11, masses of hyaline degeneration show just beneath the basement membrane and extending deeply into the submucosa. The masses on the surface, which appear at first inspection to be fibrin, I believe to be cornified epithelial cells bearing very much the same relation to the submucosa and adjacent structures as a finger nail does to a finger. It does not react to the stain for fibrin, neither does it show leucocytes entangled in the meshes, in fact, practically no cell infiltration except in one or two areas where there has been hemorrhagic infiltration. In several instances, as is shown in lantern slide No. 11, these fingers of cornified tissue penetrate deeply into the submucosa or rather have their origin, I think, in the submucous connective tissue papillæ or genetic layer of the mucous membrane and the longitudinal sections of such areas look very much like a section of a dead hair bulb.

Lantern slide No. 2 has distinct areas of hemorrhagic infiltration with degeneration, not only involving the submucosa, but extending up through the epithelial surface. The section which shows a broken-down area is due to an old hemorrhage, as it shows distinct pigmentation also the entire absorption of the genetic layer of the columnar epithelium.

The yellow areas of hyaline degeneration are similar to those found in Paget's disease. In lantern slide No. 9, which shows the piled-up epithelium, the epithelial cells which are fairly normal in appearance, seem to spring directly from the genetic layer.

DESCRIPTION OF LANTERN SLIDES.

Lantern Slide No. 1. Shows connective tissue loops penetrating basement membrane. The submucosa is fairly normal. It shows slight keratization on the surface. Also necrotic areas in the epithelial surface. It is possible that these small areas which show above the basement membrane are oblique sections of these connective tissue papillæ

Lantern Slide No. 2. Higher magnification of same.

Lantern Slide No. 3. Shows projecting connective tissue papillæ in which keratinized cells show on the surface, central area degenerated and genetic layer of basement membrane gone.

Lantern Slide No. 4. Shows broken down fibrin and leucocytes piled up on the surface of the hardened epithelium. Some hyaline degeneration in the subepithelial structure, with a distinct break in the mucous membrane. The basement membrane is entirely severed in this section. This is at least not a normal duct, but may be a fragment after the degenerative change.

Lantern Slide No. 5. Low power showing area of degeneration in piled-up epithelial surface. Basement membrane, both layers gone, cornified layer still on the surface, pigmentation as result of hemorrhage.

Lantern Slide No. 6. Same.

Lantern Slide No. 7. Higher magnification of same.

Lantern Slide No. 8. Shows a peculiar hyaline change beginning in the epithelial cell. It is the early stage of the degenerative process and shows in the slide as a peculiar run together appearance. Blood vessel wall with proliferated endothelium in the submucosa. Also degenerative spot in epithelium. Some kerato-hyaline.

Lantern Slide No. 9. Shows piled-up cornified epithelium. Subepithelial structure fairly normal. Keratosis. Basement membrane shows slight change. Blood vessel walls slightly changed.

Lantern Slide No. 10. This section is the same as No. 8, showing apparent fibrous tissue formation, which is keratinized epithelium and extends out over the surface.

Lantern Slide No. 11. Shows section of the same obliquely below the mucous membrane. Also degenerated areas and thickened vessel walls.

Lantern Slide No. 12. Shows another area of that beginning hyaline degeneration of the surface and extending down into the submucosa.

Lantern Slide No. 13. Shows epithelial surface with cornified layer of epithelium; also areas of degeneration in the submucosa directly beneath the piled-up epithelial layer. The genetic layer of the basement membrane is very thin and the connective tissue layer is almost obliterated.

Lantern Slide No. 14. Shows higher magnification of same.

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ON SOUNDING AND IRRIGATING THE FRONTAL SINUS THROUGH THE NATURAL OPENING.

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In the situation of its natural opening the frontal sinus has undoubtedly a distinct advantage over the other accessory sinuses of the nose, both on account of the thoroughness by which drainage is thus accomplished and also for the greater facility with which sounds or canulas may be introduced through the opening. Especially striking is a comparison with the maxillary sinus, with which it is frequently associated in disease, and consequently also in diagnosis and treatment. The latter sinus communicates with the nose by an opening or openings, always situated in the superior portion of the cavity, so that it is necessary for pus or other fluid contents to have reached this level and be overflowing before it will escape into the nose.

Antrum empyema therefore has generally existed a comparatively longer time before it is discovered, and therefore those chronic changes in the mucous membrane—perhaps also in the osseous wall—which render these cavities so resistant to ordinary therapeutical applications, have had better opportunity to develop.

The frontal sinus, on the other hand, having its opening at the most dependent point, and being generally well drained, is not so often affected with the pathological conditions resulting from the long-continued contact of pus with its walls, and, for the same reason, an empyema being earlier diagnosed, we might suppose that radical measures would be less often required, and that simple irrigation through the nose would most often prove sufficiently effective. Unfortunately this method of treating the accessory nasal sinuses has fallen somewhat in contempt, without regard to the natural advantages which the frontal possesses over the others.

It may be observed that some specialists who proceed immediately to radical operation when it is a case of the frontal sinus are not averse to making an attempt to cure sphenoid empyema by a course of irrigation, because the latter evades, as a rule, thorough surgical procedures. The inference then is that either they have too little patience or, perhaps, dexterity to undertake treatment of the frontal sinus through the naso-frontal canal or too great a fondness for showy surgical procedures. This method of treatment has proved successful in a fair proportion of the cases in which it has been carried out, and as it is generally impossible to positively

ascertain the length of time the disease has existed we are justified in laying down the general proposition *that in all cases of frontal sinus suppuration, where we cannot be certain that polyps, granulation of tissue, necrosis or other chronic changes are present, we should, before*

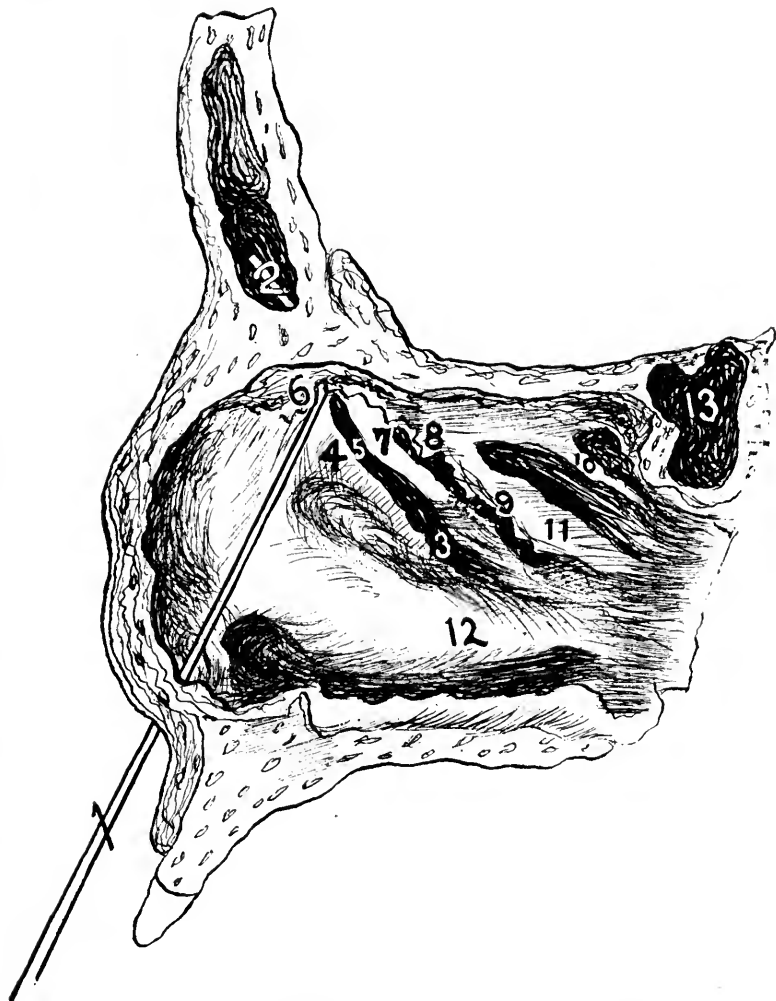


Figure 1. Section of anterior wall of nasal fossa, with middle turbinal resected. Sound represented introduced into frontal sinus.

1. Frontal sound. 2. Beak of sound in frontal sinus. 3. Opening into maxillary sinus. 4. Uncinate process. 5. Hiatus semilunaris. 6. Ostium frontale, just anterior to hiatus semilunaris. 7. Bulla ethmoid. 8. Ostium of sinus of bulla ethm. 9. Cut surface of middle turb. 10. Sup. turb. 11. Post. end of middle turb. 12. Inf. turb. 13. Sinus Sphenoidale.

proceeding to the radical operation, make an attempt to cure by irrigation through the natural opening.

Irrigation of the frontal sinus, by way of the fronto-nasal canal, serves also a very important purpose in connection with the diag-

nosis. When pus is found in the middle meatus, in or near the hiatus semilunaris, we are certain that either the ethmoid frontal or maxillary sinus, or some combination of them, is affected. Putting aside the subjective symptoms, which are unreliable, the illumination, which has only negative value, and Fränkel sign, not always obtainable, we have one sure evidence of *antrum* disease, namely, the exploratory puncture. But if, with or without antrum empyema, we find pus which we know does not come from this

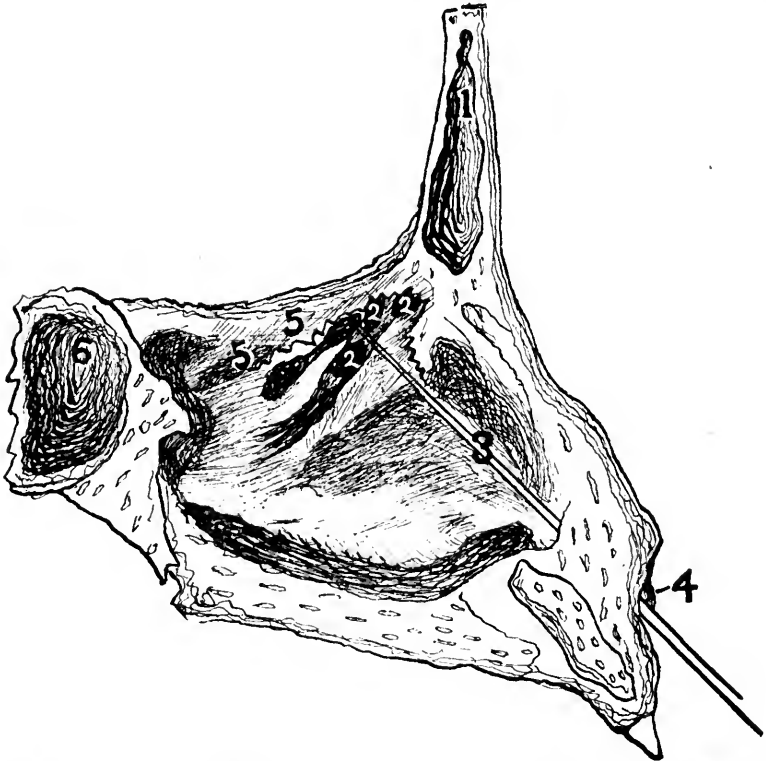


Figure 2. Section of nasal fossa showing sound entering one of ethmoidal cells. Middle turbinal resected.

1. Frontal sinus. 2. Unusually large openings of ethmoidal cells. 3. Frontal sinus sound making an angle of about 45° with floor of nose. 4. Ring indicating outward direction of beak. 5. Cut surface of middle turbinal. 6. Sphenoidal sinus.

cavity, how shall we differentiate between frontal sinus and ethmoid suppuration? Direct observation, we must admit, will often fail us, and we are left but one diagnostic expedient upon which we can depend, and that is the introduction of the sound, or, better still, the canula, through which a solution may be injected into the cavity.

With the hiatus previously cleared of pus, and the canula properly introduced into the frontal sinus, pus brought away by irrigation is a

certain sign of frontal empyema, and the only sign which deserves to rank in importance with exploratory puncture of the antrum.

To be successful in the employment of sound or canula, whether for diagnosis or treatment, it is necessary to have a clear conception of the anatomical characteristics of the parts concerned. The frontal sinus is, like other accessory cavities of the nose, subject to considerable variation in size, conformation, etc. Of the anomalies, that which has the greatest importance in connection with the subject of the use of sound or canula is the occurrence in its lower part of an anterior ethmoid cell. In attempting to sound the sinus, this cell may be entered and give the erroneous impression of having entered the sinus itself.

Very unsatisfactory, and, worse still, often positively incorrect, are the usual text-book descriptions which are given with reference to the communication existing between nasal cavity and frontal sinus. In describing this situation, it is generally stated that the hiatus semilunaris leads, by a small opening at its upper end, into the frontal sinus. In thirty cases examined by Zuckerkandl, he found that in sixteen there was either a bridge of bone in the upper part of the meatus, leaving only a blind opening above, or that the middle meatus communicated directly with the frontal sinus. The latter form of communication was so often encountered by Hartman that he considered it to be typical. In my own specimens I have found that in only one-half the cases was it possible to enter the sinus by a probe carried along the hiatus. In the other half the ostium was found either immediately or several millimetres in front of this hiatus. In one specimen in my possession, in which the uncinatè process is less than usually prominent, and the hiatus extends much less than usually forward, the nasal extremity of the fronto-nasal canal is found full 15 m.m. from the anterior end of uncinatè process in a direction above and a little forward. As a rule, however, the uncinatè process is our best guide, and when the probe carried just behind the prominence fails to engage in the canal, it will do so when reintroduced immediately anterior to it. Sometimes the ethmoidal cells communicate by openings with the infundibulum* so large that they can engage the point of the probe, which the operator may believe to have entered the frontal sinus. (Fig. 2.) Above the bulla there is often also a quite considerable opening into its sinus, into which the probe can in some cases very

* There exists some confusion in the use of the terms infundibulum and hiatus semilunaris, which led the German Congress of Nomenclature to take up the subject, with the result of adopting the term "infundibulum ethmoidale." I believe it is much better, however, to retain both terms, and, as Zuckerkandl has done, employ the term infundibulum to mean the funnel-shaped depression into which the maxillary sinus, ethmoid cells, and, in a certain proportion of cases, the frontal sinus, open, reserving the term hiatus for the mouth of the depression formed by the uncinatè process and bulla.

easily enter. Later on we will mention how best we may avoid such errors in operating upon the living subject.

Jurasz (Ueber die Sondierung der Stirnhöhle.—*Berl. Klin. Wochenschr.*, No. 3, 1887) was the first to advocate sounding of the frontal sinus through the natural opening in the nose. He used for the purpose straight whalebone sounds, and had the patient bend back the head, so as to bring the infundibulum to as near as possible a vertical position.

Hansberg recommended a sound bent at 30 m.m. from its end at an angle of 125° . Cholewa modified Hansberg's sound by making another slight bend in the beak. Lichtwitz, finding that the infundibulum was at right angles to a line drawn from its lowest point to the floor of the nose, recommended that the frontal sinus sound be made with a rectangular bend at 1 c.m. from its end. Schech adopted Lichtwitz's sound, but preferred to have it bent at 3 c.m. instead of 1 c.m. from the extremity. Hartman uses a sound with a bow-shaped beak and handle curved in opposite direction.

In order to discover which of the various styles recommended was most favorable for getting into the frontal sinus by way of the infundibulum, I made a series of tests with a flexible probe, bent at varying angle and distance from the end, upon a number of specimens kindly placed at my disposal by Dr. Hodge, of the Army Medical Museum, and upon others in my own possession, sixteen specimens in all, there was but one which I found impossible to enter with a curved sound introduced through the anterior nasal opening, due to the conformity of the middle turbinate in this case, and its close apposition to the external wall of the nose. In all other cases the frontal sinuses could be entered with the probe bent at varying angles and at varying distances from the end. I found that a probe bent a little more than 90° and about 30 m.m. from the end was that which entered with the greatest facility in most cases. When bent at less than a right angle or, more than 120° (as the sounds recommended by Hansberg and Hartman), it was not possible to enter in some cases. I found, too, that the length of beak in Lichtwitz's probe fell considerably short of what was necessary to have the point penetrate to within the cavity of the frontal sinus, and that it must be at least 30 m.m. in order to succeed in all cases. What, then, seemed to be the most generally applicable sound was one bent at about 30 m.m. from the end and at an angle of from 100° to 110° .

A probe thus shaped and measured off in centimeters, when so introduced as to have its point just reaching the floor of the nasal

sinus, *was in contact with the anterior border of the floor of the nose, at a point which averaged, in cases examined, 6 c.m. from the end of the probe.* If it was rightly directed it could now, of course, be pushed farther in from $\frac{1}{2}$ to 2 c.m., according to the depth of the sinus. As it enters the cavity, not only is the beak elevated, but the whole probe approaches more nearly a vertical direction, changing from an angle of about 45° with the floor of the nose to an angle of about 60° . If the beak of the probe misses the ostium frontale and comes forward upon the roof of the nose, or, as it may, enters one of the ethmoid cells, communicating by an unusually

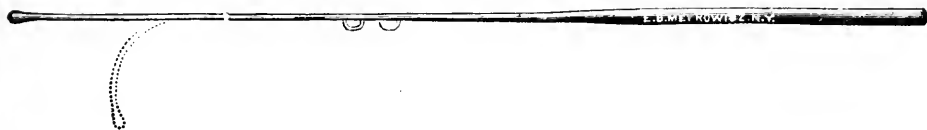


Fig. 1.

large opening in the infundibulum or just above the bulla, generally the false direction will be shown upon the handle either by the incline or by the distance to which it has penetrated. In one of my specimens the beak introduced into an ethmoid cell went out of sight over a distance of 30 m.m. When it has penetrated an ethmoid cell, however, instead of the frontal sinus, the beak is generally pointing somewhat outwards, and therefore it is best to have the sound or canula marked by a small knob or ring like the Eustachian catheter, which informs you of the direction of the beak.



Fig. 2.

In order to meet all these requirements I have ordered an instrument firm to construct for me a probe and a canula like those represented in the drawing.

This probe is 16 c.m. long and with a diameter of 1 m.m. At 6 and 7 c.m. respectively from the rounded tip end are two small rings which serve two purposes, viz., to show the direction of the beak and the distance to which the same has penetrated.

A canula I have had made upon the same plan in two sizes, 1 and $1\frac{1}{2}$ m.m., respectively and with outer end shaped for attachment of a rubber tube.

Taking an average of the claims of different writers, it would appear that in about fifty per cent of the cases met with in practice the frontal sinus is successfully entered through the nose. I believe, however, that one who has not experimented considerably upon the cadaver will often have a false impression of having entered the sinus when in reality the beak of the probe is caught in a narrowing of the infundibulum or fronto-nasal canal, or has entered one of the ethmoidal cells, or perhaps has only ascended to the roof of the nose.

A proof not previously mentioned of the probe being well into the sinus, and especially that its beak is not caught in one of the narrowings above mentioned, is the ability to rotate the handle within certain limits. Considerable excursion from side to side is permitted the beak when well into the frontal sinus, which can be executed by rotating the handle of sound between the fingers. With the probe here figured, observing all the precautions mentioned, I have been able in a series of forty-two cases in dispensary practice, taken at random, to enter the frontal sinus twenty-eight times. In but two of these had the middle turbinal been previously removed.

In case of its removal (anterior end) the proportion of successes would be doubtless much increased, and would reach, I am sure, at least seventy-five to eighty per cent.

To recapitulate: To successfully sound the frontal sinus we must have a probe bent at 3 c.m. from the end, which should be rounded, and at an angle of about 100° , though capable of being flexed to a greater or less extent to suit individual differences. Using the uncinate process as the guide (resection of the anterior end of the middle turbinate is necessary in some cases) to begin, we apply the beak of the probe well backward in the hiatus, and draw it forward and upward in the direction of the sinus at the same time that the handle is depressed. If it does not slip easily into the cavity, do not use force, but holding always the probe lightly in the hand, reintroduce, feeling for the ostium with the beak a little in front of the hiatus. If the sound be in place we will be aware of it by the following tests: (1) The probe will have penetrated such a distance as to measure more than 6 c.m. (between 6 and 7 c.m.) from its extremity to the point where the handle is in contact with the anterior border of the floor of the nose; (2) the direction will be such that it makes an angle of about 60° with the floor, or, what is the same thing, the handle makes such an angle with an imaginary horizontal line or plane, continuing the floor of the nose forward; (3) the beak of the probe will be directed forward (as shown by the ring indicators on the handle); (4) the handle will permit of a certain amount of rotation.

ON A REMARKABLE CASE OF GLOSSO-PHARYNGO-LABIAL PARALYSIS COMPLICATED WITH ANEURISM OF THE AORTA.*

BY W. FREUDENTHAL, M.D., NEW YORK.

In view of the fact, that in general the prognosis of bulbar paralysis is so unfavorable and the treatment of such patients so unsatisfactory, the case, which I have the honor to demonstrate before you to-night is a very sad one, more so as it concerns a genial and bright colleague, who until now has been quite a prominent figure among the medical men of his home city. His history is as follows: Dr. F. of O., sixty-one years of age, had always enjoyed perfect health in spite of a very extensive practice until November 14, 1894, when he came home tired and worn out, suffering from a severe attack of influenza. He had an incessant cough, caused by a permanent irritation in the larynx. The tonsils were swollen, nose clogged up and he had pain in the larynx. These symptoms persisted for several months, although in a less marked form. His voice became steadily weaker and quickly fatigued. He then went to Boston, where a colleague removed the tonsils. When I saw the patient for the first time, on the 8th of March, 1895, his language had become so indistinct that I could hardly understand him. He wrote down, however, that only a week ago he had been able to pronounce some sentences very distinctly. The patient, who lived at a distance of about 500 miles from New York City, had come to consult me after reading my article on "Rheumatic Affections of the Throat and Nose." I apparently agreed with his preconceived ideas as to his condition—very much to his relief. *Quod volumus, credimus libenter.* Personally I am sorry to say, I soon reached a different conclusion, as the examination revealed the following status: as the patient had a very voluminous tongue which even at that time he could not readily protrude, the laryngoscopic examination was quite difficult. In the nose and pharynx there were only slight inflammatory conditions. A marked redness and swelling was seen on the epiglottis, especially on its laryngeal surface. The left vocal cord was immovable in the so-called cadaveric position. The motions of the right vocal cord

* Read before the Laryngological Section New York Academy of Medicine, February 27, 1901.

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were not as free as in the normal and very slow. Still it moved somewhat to the other side, compensating in a small degree for the complete paralysis of the left vocal cord. The appetite of the patient was good, the mastication easy, but deglutition somewhat difficult. He had to be careful in drinking or else regurgitation through the nose would occur. When the patient was speaking, it was noticeable, that he was entirely unable to pronounce the guttural sounds k and g, the p sounded like mp, etc. He could not whistle, but could laugh very well. The lingual sounds were preserved, as well as the motions of the tongue towards both sides and up and down. The sensibility was normal all over the upper respiratory tract. The reflex irritability of the tonsils, the soft palate, the uvula as well as the pharyngeal wall, and the epiglottis—I could not get further down with my probe—was not only preserved, but increased; even the application of cocaine impaired but slightly, this increased irritability.

Appetite, sleep and bowels were good, as usual. There was no history of syphilis. I did not examine the reflexes of the extremities in order not to divert the doctor's attention from his idea of rheumatism, but even without this confirmatory evidence, I was able to make the diagnosis of paralysis glosso-pharyngo-labialis. Now, this diagnosis explained the reduced mobility of the right vocal cord, but not the cadaveric position of the left one. I, therefore, examined the chest organs and found a pronounced aneurism of the aorta as the cause of the paralysis of the recurrent nerve. But before entering into further details of the disease and the role apparently played by the aneurism, you will permit me to report the subsequent progress of the case. If there had still been any doubt about the diagnosis, it would have been removed by the further developments. It is strange that such an intelligent colleague as was Dr. F., could be so easily deceived about his condition. He really felt better in the first few weeks of my apparently anti-rheumatic treatment. As I, as well as his companions, soon learned to understand his language and to read the words from his lips, I could easily suggest to him an improvement. In this hopeful state he wrote to me

March 15, 1895.—" * * * That treatment had a marked effect and I feel confident it is going to be beneficial. My throat annoyed me much less. * * *"

March 24, 1895.—"I think my voice is gaining a little."

April 2, 1895.—"I feel I am improving. Thanks to you!"

April 10, 1895.—"Have you any article on post-diphtheritic paralysis or the sequelæ of la grippe? I am anxious to ascertain if

any case is known when paralysis of a peripheral character ever followed la grippe. My throat feels better, but no change observable in the paralysis."

The doubts he expressed on that day disappeared after I told him that I intended to demonstrate him on the 11th before this meeting and that most likely a thorough discussion of his case could be expected. This morning he brought me the usual slip of paper on which he wrote: "I can again use my voice better." In spite of all these selfdelusions the disease made rapid progress.

You see here, gentlemen, this amiable colleague, on whom you will easily recognize the described symptoms. At the first glance you see a decided ptosis on both sides, a sign that the oculomotor nerve is also affected. You notice further, how frequently the doctor has to wipe his mouth and this salivation is a symptom that troubles him particularly. When I make him answer some questions I put to him you will observe the deficiencies in his speech, described above. The muscles of the neck (*cucullares*) are well preserved on both sides, and this also applies to the muscles of the extremities, which act well. The general electric irritability is unaffected, according to an investigation of Dr. N. No atrophy of any muscle is to be found.

What interests us especially here is the paralysis of the laryngeal muscles, which is caused by two factors. Firstly, the very large aneurism of the aorta produces the cadaveric position of the left vocal cord by pressure on the recurrent nerve. Secondly, the central affection has an influence besides on the action of all the intralaryngeal muscles. I must confess, however, that the position of the vocal cords was similar to that of other cases described in literature, in which there was no complicating aneurism. What leads me, however, not to lose sight here of the action of the aneurism is, first, its large size, the area of dullness being larger than a fist, and second, the fact that the right vocal cord extended a little towards the left side in a compensatory way.

It therefore seems to me, that the aneurism was the primary disease, although but few points in support of this can be found in the history, as for example, occasional hoarseness and transitory asthmatic attacks—and that the bulbar paralysis with its consecutive affections followed later. Now, the important question arises what shall we do for our colleague, who is in such an unfortunate condition? So far, I have applied general systematic galvanization and local massage with my electric vibrator. Besides the ordinary remedies have been used according to the symptoms. But what we

have to fear more here, than in other cases of paralysis glosso-pharyngo-labialis is sudden suffocation, an accident not so very uncommon in this condition. To prevent this, different remedies have been proposed. The oldest is tracheotomy.

But for many patients the discomfort from wearing the tube is extremely disagreeable. The same applies approximately to intubation. It has also been recommended by O'Dwyer to remove a part of one or both vocal cords in order to thus produce a permanent opening of the larynx. All these measures had been proposed to the medical advisers and friends of our patient, but were not accepted.

Since bringing this case before a medical society of New York City on April 11, 1895, at which time the above remarks were made, it has steadily progressed to a fatal termination. It might perhaps be of interest to present some of the observations which the patient made on himself. I would state that the doctor occupied a most respected position, by reason not only of his integrity, but also of his medical knowledge. It is necessary to mention this in order to understand the personal observations of a colleague, who perhaps realized exactly his condition, but did not venture to confess it even to himself. From his daily records, which he brought me every morning, I cite the following. He writes on

March 23, 1895.—"I am certainly no worse this morning and hope you may think I am a little better. I want to see a real gain established, then I can wait more patiently. External pressure shows a little soreness on left side of larynx."

March 26, 1895.—"I am using my voice a little better this morning." On

April 11, 1895, he wrote down more particularly at my request some of his symptoms:

"At times, lasting from a few seconds, to more or less for several days, certain muscles seem temporarily parietic. I have a greatly diminished power to blow my nose, and then after a few days much more power and then again lapse back to the inability. It is so to use any voluntary effort to assist in a passage of the bowels. The diaphragm sometimes is in the same state. To inspire, I am often cut off for a second or two. Then I will be weak in the arm—and then be all right."

April 12, 1895.—"Did the colleagues think I shall regain my voice? They think it peripheral and not central in origin, do they not?" (! ! !) On

April 17, 1895, he writes, "Dear Dr. Freudenthal: Accept the small present enclosed, as a meager expression of my appreciation of your ability, interest and courtesy. You have been very kind and I hope *soon* to return partially for all this."

While he was thus full of hopes, he found a little later on the arrival at his hotel the last number of a New York medical weekly, in which he read a short report of my demonstration of his own case, which gave the main facts. The effect on his mental and bodily condition was extremely painful. When I saw his huge figure lying on the sofa of my waiting room the next morning, shaken with sobs, it occurred to me more than ever before, how limited were our therapeutic resources. The very same morning he felt that his right arm was affected by the progressive paralysis and that he could write only with an effort. On the same day he left for his home.

The further progress was a rapid one. He could not write any more himself, but I received regular reports from his friend, Dr. P. He writes:

June 8, 1895.—"Our mutual friend, Dr. F., has gradually failed. He is still able to go out for a ride, but will not be able to do so much longer, if his disease progresses. He has a feeling of great muscular weariness. His right arm and hand he can use very little, and is only able to write by steadying it, and his writing is angular, much like a beginner's."

He often gets attacks of suffocation, which, of course, are due to the inspiratory insufficiency, and feels very much depressed.

August 9, 1895.—"There has been a gradual failure of strength with entire loss of use of right arm and hand and nearly entire loss of left. The left hand can be used for pointing out the letters on a card, which is his only method of communication. This is often difficult. The legs are weak, so much so, that it is impossible for him to walk without constant support. He has two attendants, who care for him day and night. He eats quite a good deal and those who care for him insist that he swallows better than he did. I am not sure about that."

The symptoms that troubled him most, and for which he urgently requested relief, were the attacks of suffocation. But he refused constantly any operative interference. Now this condition became rapidly worse until one morning, when he was seized with an attack of suffocation, to which he succumbed within a very few minutes.

I was informed that an autopsy was made, *but no atrophy was found in the central nervous system, nor muscular apparatus*, as shown

by a microscopical examination. I am sorry to say that the details of the post-mortem examination are missing.

On reviewing this case we find several points of especial interest. We have before us the typical picture of the "Maladie de Duchenne," or the paralysis glosso-pharyngo-labialis. In the usual course of these cases one of the first symptoms is a partial paralysis of the tongue. This shows itself by an inability to bring the tip of the tongue against the teeth, thus making it impossible to pronounce the lingual sounds. Later on, swallowing is impaired as the dorsum of the tongue cannot be approached to the velum. In our case the paralysis of the back of the tongue was the first symptom to set in and not until some time later did paralysis of the tip of the tongue appear. We could not note an atrophy of the muscles of the tongue, on the contrary, the tongue seemed rather too voluminous. Soon also a paralysis of the velum was added to these symptoms, and the difficulty in deglutition was still further increased. Afterwards the case developed into the typical picture of the progressive atrophic bulbar paralysis. In this disease we find now and then some nerve ganglia affected, but without perceptible atrophy. It is therefore the more noticeable, that no atrophy was found in the above case. This reminds us of the rare cases reported by Oppenheim, Eisenlohr, Wilks and H. H. Hoppe. I think I am justified in placing my case in this category. As the symptoms during life were very similar and the pathologic-anatomical findings also, we shall have to leave it to the future to decide the correctness of Hoppe's suggestion, that there exists in these cases* an affection of the cortical substance, which we cannot demonstrate with our present means. At any rate these cases require special consideration, as Goldflam rightly remarks, as they differ in certain points materially from typical bulbar paralysis. I cannot go into further details regarding these questions as they would lead us too deep into the purely neurological field.

What interests us more, however, is the laryngeal affection. We had here a large aneurism of the aorta from which a paralysis of the left vocal cord could easily be expected. We had furthermore the affection of the central nervous system in which a paralysis of both crico-arytænoidei postici is nothing unusual.

What caused the laryngeal symptoms in our patient? Was it the aneurism alone? Nobody will admit that. Or was it in consequence of the bulbar paralysis alone? I believe that even that cannot be accepted. It seems to me rather probable, that both con-

* *Berl. Klin. Wochenschrift*, p. 332, 1892.

ditions helped to produce these effects. The reasons for this belief, I may repeat here, are that the right vocal cord moved in the beginning of the disease somewhat over the median line towards the other side in a compensatory manner. This seemed to me a sure sign of the primary influence of the aneurism of the aorta. Later on, this picture changed and the paralysis of the posterior crico arytenoidei was plainly visible, to such an extent that both vocal cords were now equally passive, the motion of the right being as limited as that of the left. We were, therefore, forced to take this paralysis into consideration and if possible to do something against it. As mentioned above, in order to prevent the danger of suffocation, which was to be expected surely, we proposed one of three possible operations, viz.: Tracheotomy, intubation, or the removal of a part of the vocal cords. Alas, all this was rejected and the patient died from suffocation.

That this accident does not occur so rarely, is proved by the cases reported in the literature. For this reason only lately Dr. N. L. Wilson (*THE LARYNGOSCOPE*, September, 1900) speaks in favor of an early operation, a view, which we can also support by our experience. Of course it cannot be denied that in our case the intralaryngeal operation proposed by O'Dwyer would have been extremely difficult if not impossible. Even the simple examination of the larynx was very tiresome with this hardly manageable, somewhat voluminous tongue, in connection with the tremor and the permanent salivation. Hence I should not have liked to resort to such a procedure. But there still remained the simpler intubation or tracheotomy which undoubtedly would have postponed the end. I myself have observed two other cases of abductor paralysis which both terminated in a similar way suddenly falling dead while walking on the street.

Only a few weeks ago an article appeared by Charles W. Burr and D. J. McCarthy (*American Journal of the Medical Sc.*, p. 46, 1901) on Asthenic Bulbar Palsy. The authors report one case of a married woman of nineteen years of age. They do not mention any laryngeal symptoms. After narrating the history they remark, that finally difficulty in swallowing set in, dyspnea appeared, cyanosis and coma developed and she died the next morning. The necropsy revealed nothing. Very peculiar is the *second case* seen by Burr and McCarthy. It was in a woman of twenty-four years of age. First the left arm began to be numb, a day or two later the numbness extended to the left leg. Then she suddenly developed true palsy of the right face. Afterwards appeared

"a little trouble in swallowing, slightly nasal voice, weakness of the muscles of mastication on both sides, etc." There was no muscular wasting anywhere. "After a few months she improved rapidly and now is quite well." !! The authors placed this case tentatively there. Quite in contrast to this is the case observed by Allbutt.* It is an instance of bulbar disease, the issue of which was "a great shock and a painful lesson" to him.

Miss —, aged eighteen, of good personal and family history, caught cold six months previously, followed by stiffness of the tongue and jaws.

These symptoms disappeared after a few weeks. Soon her language became peculiar and she talked as if with a potatoe in her mouth. Phonation did not fail, but articulation, as if there were an inco-ordination of the muscles of speech. When she commenced to read, it went pretty well, but soon she became unintelligible. Her friends told the doctor that she read much better when she was alone. Later a difficulty in swallowing came on, the description of which seemed to be like that of "neurotic spasm of the esophagus." All of these symptoms together caused Allbutt to make the provisional diagnosis of hysteria, "yet with reserve." The patient by the way was a healthy, well-looking girl, with no evidence of palsy or atrophy. Visual field was normal. Allbutt then continues: "on some moral discipline and tonic medicine with valerian, she improved so much that our apprehensions were lulled to rest and I did not see her again." She seemed quite on the way of recovery. One morning her symptoms became worse again, especially the swallowing, and her mother, seeing this, warned her somewhat sharply to control herself. "The next day the patient came into her mother's bedroom about 8:30 a. m.—to protest, as well as she might, poor child, that she really could not help these eccentricities—when suddenly she fell to the ground, was convulsed, turned blue and died at her mother's feet. She could hardly have died by choking with food, as this terrible event happened before her breakfast." This was most likely, says A., also one of those rare fatal instances in which the medulla has been found apparently free from structural disease. To us, however, it is very evident that this girl suffocated in consequence of a paralysis of the laryngeal muscles, just as the other cases quoted, and it gives us a new warning to watch these cases very carefully and permanently.

* *Allbutt's System of Medicine*, Vol. vii, p. 238.

PRIMARY CARCINOMA OF THE NASO-PHARYNX; REPORT OF A CASE.

BY CHEVALIER JACKSON, PITTSBURG, PA.

On March 5th, Miss J. P., æt. twenty-three, a corkworker, was referred to me by Dr. Leon Sadowski. She is white, American born, of German parentage. Her family history is negative as to cancer, syphilis and tuberculosis. There is no personal specific history. She complained of constant lancinating pains in her right cheek, above her right eye, deep in the right ear, and in and under the right lower jaw, so severe at night that she has been unable to sleep for three months. Dr. Sadowski stated that during the few days she was under his care half-grain doses of morphine had no effect. Prior to three months the pain had been intermittent for a year. Right nasal stenosis was first noticed three weeks previous to her consulting me, but had probably existed longer. The discharge anteriorly and posteriorly was odorless, thick and yellow, with no admixture of blood, and there was no history of hemorrhage. There was infiltration and tenderness of the cervical, post-cervical and submaxillary lymphatics. Ankylosis of the jaw prevented separation of the incisors more than half an inch. The face was asymmetrical, right cheek somewhat swollen, and the general appearance of the patient was somewhat cachectic. Dr. Theodore Diller, after a careful examination, reported the functions of the fifth and seventh nerves unimpaired. Dr. C. A. Wishart kindly examined the eye ground and reported a low grade optic neuritis in both eyes. V. A.: O. D. $\frac{15}{30}$ O. S. $\frac{15}{70}$. Upon inspection of the fauces I found a slight redness and infiltration of the right pillars and a bulging downward of the velum on the right side. The rhinoscopic mirror brought into view a large cauliflower-like mass completely hiding the right choana and fossa of Rosenmüller, and burying from view all of the Eustachian prominence except the border of the orifice, which was in line with the vomer owing to the swollen and infiltrated condition of the eminence. This lateral mass was in contact with large masses of adenoid tissue which hung downward from the vault, and which in appearance differed from adenoid hypertrophy only in a red-bordered ulceration at the free extremities of some of the masses. The jaws could not be separated sufficiently wide to permit the finger to reach the vault, but on palpation through the velum a soft pultaceous mass could be felt above a harder

mass, which latter was evidently the infiltrated Eustachian prominence. On anterior rhinoscopy after depletion with adrenalin and cocaine, a grayish-pink mass could be seen back in the naso-pharynx, but it was apparently not attached to the turbinals, and was certainly not in the nasal cavities. Several fragments of the growth were removed anteriorly with alligator forceps. Pending a report the patient was put on specific treatment, with large doses of morphine and antipyrin to control the pain. Microscopical examination of the fragments by Dr. Edward Mayer showed nothing to indicate malignancy. For the purpose of getting a more satisfactory specimen, and of making a digital examination, the patient was chloroformed, a gag inserted and the rigidly ankylosed jaws forced open. The finger determined the growth to spring from the outer wall of the naso-pharynx, both anterior and posterior to the Eustachian em-



inences, though the point of greatest degeneration, and therefore probably of origin, was at the junction of the vault with the outer wall of the naso-pharynx between the Eustachian orifice and the choanal margin. The pterygoid plates could be plainly felt as the soft degenerated tissue gave way under the finger. The Eustachian eminence was three times the size of its fellow and quite hard except on its anterior aspect where it was breaking down. The posterior end of the middle and inferior turbinal were infiltrated, but not breaking down, evidently having been but recently involved. With the aid of Dr. Milligan I removed all of the growth that would come away readily, along with the involved right Eustachian eminence by means of the cold snare, Gottstein curette, side curette and Heyman's adenoid forceps. The masses aggregated the size of a hen's egg. Dr. Edward Mayer examined sections of the growth microscopically and reported it to be a columnar epithelioma.

GUMMOUS TUMOR IN THE LARYNX IN A BOY SIX YEARS OLD, DUE TO LATENT HEREDITARY SYPHILIS.

BY GÖTTLIEB KIAER, M.D., COPENHAGEN, DENMARK.

Hans S., inmate six years in Queen Louisa's hospital for children.

The father has syphilis, the mother was infected four months before pregnancy; during this time she received mercurial inunctions. She has never aborted.

The patient is an only child with precocious development as to walking, speaking and teething. He has always been slight, but lively and apparently healthy. At the age of three years he had measles, after which was developed a left-sided pneumonia; recovery uneventful. In the winter of 1898 he had the whooping-cough, followed by a discharge from both ears. Upon the whole, he has, with the exception of a little coughing now and then, been healthy until a month ago, when swellings began to appear in the throat, partly lateral, partly anterior; these have increased in size. The respiration became stridulous, but there has been no impending suffocation. He has begun coughing and brings up slimy lumps. He sweats a great deal and feels tired and faint, but only now and then has he been confined to bed. The appetite, never good, has steadily diminished, but there has been emesis. Temperature, $37.5^{\circ}\text{C}.$; pulse, 144 (before the examination), regular and quick. He is pale and thin and has very bad hearing. The respiration is not accelerated. There is no inspiratory laryngeal stridor during sleep, and when awake respiration is noisy, but without inspiratory depressions in the jugular or cardiac region. He breathes mostly with open mouth, but his nostrils are open. Considerable adenoid vegetation present.

There is some hypertrophy of the tonsils. There is a slight paresis of the left side of the face with effacing of the naso-labial sulcus and some laryngothalmus. The pupils are equal and normal; there is no keratitis.

Facial paralysis is said to have arisen only during the last few days. The tongue is moist and coated. Under the right ear is seen a fluctuating, red swelling in the skin about as large as a plum.

The stethoscope reveals nothing abnormal. The abdomen is flat without palpable swelling of the spleen or liver. On the middle of the chest in the region of the third, fourth and fifth costal cartilage is found an intumescence of the size of a 50-cent piece; has no fluctuation, but intense soreness. The left part of the thyroid gland is swollen and indolent. The urine is normal. April 11th, $\frac{37.7}{37.4}$; April 12th, $\frac{37.6}{36.4}$. The swelling in the sternal region has increased. The soreness seems completely to have disappeared. The swelling stretches to the right of the sternum, but there is no fluctuation. April 13th, $\frac{37.6}{36.6}$; April 14th, $\frac{37.0}{36.0}$; April 15th, $\frac{37.9}{36.3}$; April 16th, $\frac{37.1}{37.2}$; April 17th, $\frac{36.9}{37.2}$.

The respiration during sleep is unchanged and the swelling in the sternal region has disappeared. The glands at the right of the ear and the enlargement of the left thyroid patch is unchanged. Prescribed solution kali iodide, 5::200. 10 grams four times daily, $\frac{2}{4}$. During the last days there has been some difficulty in swallowing meat, but probing discovers no stricture in the esophagus. April 27th, $\frac{37.0}{37.2}$, abscess under the right ear has perforated spontaneously. May 2d.—Laryngeal swelling seen in the left glosso-epiglottic region about the size of an almond. It presses the left half of the epiglottis over against the right side by which the epiglottis assumes the form of a lyre. From there the infiltration continues at the back, filling all of the left sinus pyriformis and at the same time it extends into the vestibulum laryngis, taking the largest part of this and only left a narrow fissure as an air passage, thus preventing a deeper view of the parts. The infiltration has a compact, stiff appearance. The surface is smooth, tense, and curled without ulceration. The color is natural with the exception of the expanded vessels. The tumor on the throat is seen and felt at the point of the thyroid cartilage. The voice is aphonic. May 5.—The voice is clearer; the difficulty in respiration is less than formerly. May 13.—Facial paralysis has now almost disappeared. May 30.—The laryngeal tumor is disappearing from the glosso-epiglottic region. The epiglottis is natural again; the right vocal cord is now to be seen; outwardly there is no swelling to be felt; respiration is free and the speech is good.

Prescribed inunctions $1\frac{1}{2}$ grams. Solution of kali iodide 5::200, 10 grams four times daily.

June 6th.—The infiltration now appears only as large as a pea, the swelling being over the left vocal cord. The sinus pyriformis is free. June 27th.—Inunctions of iodide of potash. September 24th.—Larynx is normal; urine is normal. September 25th.—The

patient is dismissed after having taken 100 grams of iodide of potash and 36 inunctions of $1\frac{1}{2}$ grams, etc., etc. He is somewhat pale, but is in pretty good state of health.

This case serves as an example of latent hereditary syphilis. The child, born of syphilitic parents, developed normal to the seventh year. Then he showed signs of syphilis and at the same time developed gummatous infiltration on the sternum and larynx and polyadenitis, which is said to be peculiar to congenital syphilis. Later he developed a left-sided facial paralysis. The gummosus infiltration on the sternum spread rapidly downward, then completely disappears in the course of four or five days. The infiltration in the larynx has quite a capacity for resistance, and only ceased during the iodide of potash treatment after the facial paralysis had disappeared. There was an outward tumor of the throat at the point of the thyroid cartilage. In all the literature at my disposal I have only found two cases like this. Schoetz, *Deutsche Med. Wochenschr.*, 1889, No. 36, cases 1 and 4. Two boys aged respectively nine and twelve years. Both like my case; first-born and healthy at birth, and only at the beginning of second dentition showed symptoms of syphilitic development. The larynx was affected and in one case tracheotomy was necessary. Cases of syphilitic larynx in children are no rarity. J. Mackenzie, Semon, Chiari, Lewy, Arslan, Sokolowsky and Frank D. Brown have reported them, but the rare gummatous form has seldom been observed. It is impossible to diagnose the gummatous larynx from neoplasms like sarcoma, and only the treatment can determine the etiology.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, February 27, 1901.

W. K. Simpson, M.D., Chairman.

Preparations of Suprarenal Extract.

DR. W. F. CHAPPELL exhibited lozenges of the suprarenal extract, each containing $2\frac{1}{2}$ grains, made up with biborate of soda and sugar. They are very pleasant for internal administration, and as they dissolve very slowly in the mouth, they temporarily exsanguinate the tongue, buccal mucous membrane and pharynx. Dr. Chappell also presented a ten per cent solution of suprarenal extract, made up with one per cent of resorcin. This keeps well, and is useful for sprays for the throat and larynx. Some of this solution had been kept for several months without any evidence of deterioration.

DR. T. R. CHAMBERS said that he had made some experiments with the adrenalin. So far he had found its internal administration causes nausea and has no effect in contracting the blood vessels; hence, when swallowed whole it was useless, but if allowed to dissolve slowly in the mouth the local effect would be satisfactory.

DR. C. G. COAKLEY said that about one year ago he had mentioned resorcin as an excellent preservative for suprarenal extract, but he had used only a one per cent solution, yet it had kept the solution perfectly for months.

DR. J. WRIGHT presented some hand trephines which he had used for the last three or four years in opening the antrum and sinuses. They were simply the ordinary bevelled cranial trephines reduced in size.

DR. EMIL MAYER said that he had objected to the use of the trephine in this region, during the discussion at the last meeting, and in doing so had had reference to the electro-trephine, and not to the instruments of this kind, which can be controlled by the hand.

DR. FRANCIS J. QUINLAN referred to a case presented by him at the last meeting. Since that time, he said, he had subjected this patient to thorough antispetic treatment, but the symptoms of

dysphagia and dysphonia had increased rather than diminished. The man had then developed some fever and there was every evidence of infection. The cervical glands in the meantime had become involved. After consultation, a complete laryngectomy had been done, and he now desired to exhibit the larynx that was removed by Dr. Bodine. Running down for about one inch into the deeper tissues of these structures was found an extensive cancerous mass that not only filled up the wall of the larynx but likewise involved the esophagus as well.

DR. W. K. SIMPSON recalled the fact that a considerable difference of opinion had existed at the last meeting, some thinking the growth syphilitic, and others malignant. He had at the time looked upon the growth as malignant, basing that opinion upon the peculiar appearance of hardness.

DR. WRIGHT said that on looking for a moment at the last meeting at this case it had appeared to him to be specific, and he mentioned this to emphasize how difficult it is to make a snap diagnosis in such cases. He had seen two or three cases of this nature in the past month, and had found it impossible to make a satisfactory diagnosis without a microscopical examination, and considerable clinical study.

DR. W. C. PHILLIPS made the point that glandular complications of malignant disease of the larynx might sometimes come on very late in the disease. He had at present under his care a patient in whom the first evidence of the disease had appeared over a year and a half ago with hoarseness. There was now a tumor filling over two-thirds of the cavity of the larynx, though without the slightest evidence of glandular involvement. The growth was entirely within the laryngeal box.

Growth from Septum.

DR. EMIL MAYER presented a growth which had been taken from the upper part of a septum of a woman, sixty-six years of age. She had come to him last January with a history of having had profuse bleeding from one side of the nose for the past three months. The clinical diagnosis had been angioma of the septum, and fearing hemorrhage, she had been taken into the New York Eye and Ear Hospital. The growth had been removed at one sitting with the cold snare, aided by the use of suprarenal extract. The pathologist had reported that a large portion of the growth was composed of blood and shreds of altered fibrin. The growth proper was composed of connective tissue cells of various forms, usually without definite arrangement. It was liberally supplied

with blood. It was peculiar in that it presented the elements of both malignancy and benignancy side by side. The operation had been done six weeks ago, and there had been no further hemorrhage, and no return of the growth. His own opinion was that the growth was benign.

A Case of Hodgkin's Disease (?).

DR. QUINLAN presented a little boy, about nine years, who was sent to him at St. Vincent's Hospital last January with his tonsils enormously enlarged. They had been removed finally after repeated cuttings. The boy presented at that time the characteristic appearance of a child with tubercular adenitis, but this condition was thought to be largely the result of the condition of the tonsils. Shortly after the operation both sides of the neck became enormously swollen, and a blood count taken at the time showed a decrease in the red and an increase in the white cells. About ten days ago, shortly before retiring, he had been attacked with nausea and the next morning the mass had entirely disappeared. The temperature had risen rapidly to 106° F., and had then gradually fallen to the normal. During this period the boy had lost nearly twelve pounds. Several photographs were presented to show the condition of the boy at the different stages. The speaker said that there was, of course, some doubt as to whether this really was a case of Hodgkin's disease. There had been no evidence of a purulent accumulation and the mass had felt extremely hard just before the sudden and mysterious subsidence. The stools were also examined for pus or blood, but with negative result.

DR. MAYER thought the picture of the child suggested that of Hodgkin's disease with, in addition, a tense swelling, possibly the result of a suppurative process that had eluded even the careful observation of those in charge. The elevation of temperature seemed to support this view.

DR. MEIERHOF said that he had seen such large, hard glands in the neck in cases of retropharyngeal abscess. Savage, the anatomist, had pointed out that in children the glands lie between the bodies of the vertebræ and the pharynx, and that these glands disappear at about the age of this child. He had himself seen many retropharyngeal abscesses, and would suggest that in this case the pus might have found its way laterally through the loose tissue. Two or three years ago he had seen a case of supposed peritonsillar abscess in which numerous punctures failed to detect pus. A general surgeon had then made a very deep incision into the neck before he had succeeded in reaching the abscess.

DR. W. L. BANER said that if the diminution of the swelling had been due to the rupture of an accumulation of pus, certainly at least ten or twelve ounces of pus must have been discharged, and this should have attracted attention. He had seen the child the morning after the subsidence of the swelling, and the glands had then been only about the size of the ends of the fingers.

DR. QUINLAN, in closing, said that the walls of the pharynx had been very carefully examined repeatedly before the operation, and there had been absolutely nothing to excite even a suspicion of retropharyngeal abscess.

Exophthalmos of Doubtful Origin.

DR. EMIL MAYER presented a case of exophthalmos of one eye occurring in a young man. Vision was normal and the ophthalmoscope showed no cause for the condition. His nose was so much obstructed by a cartilaginous deviation that no view of the interior could be had and it became necessary to perform the Asch operation. Since then it had been possible to eliminate any pathological condition in the nose as a cause of the exophthalmos. He was of the opinion that there was an osteoma or a fibroma springing from the ethmoidal region on one side and the frontal sinus on the other. This probably explained the great mobility of the eyeball. According to the history, the man had received a very severe blow in that region about fourteen years ago. One year later he had developed acute articular rheumatism and endocarditis, and at this time the eye began to bulge. The swelling dated back so many years that it could hardly be a malignant growth. This was one of the very few Asch operations that he had done under local anesthesia, the cardiac condition making anesthesia dangerous, and it had been accomplished with no special difficulty.

DR. T. R. CHAMBERS presented a man with cleft palate in order to demonstrate the ease with which the Eustachian catheter could be introduced.

DR. QUINLAN presented a man about fifty-five years who had been injured last May in the region of the frontal sinus by a severe blow. A few weeks ago he had made an exploratory dissection, and had found one of the frontal sinuses filled with spiculæ of bone. The encroachment of the septum had interfered with the movement of the eyeball, resulting in a dacryo cystitis. The operation had given considerable relief; the appearance of the patient has been greatly improved by it.

DR. QUINLAN also presented a woman, aged twenty-one years, who had come to his clinic with symptoms of urgent dyspnea. The vocal cords had presented complete abductor paralysis and suffocation seemed imminent. He at once performed tracheotomy, and had kept the tube in for two weeks. The cords since then showed marked movements. She was now doing well, but there was still considerable sub-mucous thickening below the cords that caused some hoarseness and slight dyspnea upon exertion.

DR. MEIERHOF said that he had seen cases of this kind in which the cause of the dyspnea had been that the vocal cords could not be separated because they were bound down by these fibrous bands. If the latter were separated, and then moist inhalations employed, the patient would be relieved.

DR. MEIERHOF said that he had seen cases of this kind in which the cause of the dyspnea had been produced by means of pus finding its way into the larynx from the ethmoidal and sphenoidal sinuses during sleep, the secretion becoming inspissated and mixed with dust, formed fibrous-like bands, thus holding the cords down in the position of adduction. If these bands were removed by a moistened swab and then followed by moist inhalations, the patient would not only be relieved of the dyspnea, but also of the aphonia.

DR. R. C. MYLES recalled a subglottic case with extreme dyspnea, seen about two months ago. He had hesitated to do tracheotomy, though prepared for it as an emergency. She had been given large doses of the iodide, 80 grs. t. i. d., and was now singing on the stage.

A Case of Laryngeal Stenosis.

DR. W. K. SIMPSON presented a man with laryngeal stenosis. There was a history of slight hoarseness lasting about one year. About four weeks ago there had been a sudden exacerbation, associated with pain and difficulty in breathing. At the present time, the whole left side of the larynx was involved at the expense of the arytenoid cartilage. There had been a purulent discharge from that region; hence he presumed it was a case of perichondritis. The man was fifty years of age, and had no history of syphilis. It was possibly secondary to malignant disease. At present he was under treatment with iodide.

DR. MAYER said that he had reported a case of perichondritis with autopsy, in which the hoarseness had lasted for sixteen years, and had exhibited an acute exacerbation with abscesses.

DR. WRIGHT said that he had had two or three cases apparently with no more obstruction, and yet they had died suddenly within a few hours after examination. He regarded the man as being in a very dangerous condition.

DR. COAKLEY thought these cases should be operated upon early, not only because of the danger of sudden death, but in order to prevent destruction of cartilage. He would favor tracheotomizing the patient and making an external exploratory incision down upon the necrosed cartilage and treating it surgically as necrosed tissue in other regions of the body.

A Remarkable Case of Glosso-Pharyngo-Labial Paralysis.

DR. WOLFF FREUDENTHAL reported this case.

DR. WRIGHT said that this case exactly corresponds with cases first described many years ago by McCall Anderson and others. The explanation was that there was first an abductor paralysis, but as the disease progressed it fell back into the cadaveric position. It was supposed that there was an ascending neuritis to the base of the brain, where it crossed over at the chiasm and continued as a descending neuritis which caused the abductor paralysis on the other side. The speaker said that he had just seen a case of carcinoma of the esophagus in which the disease had extended down the esophagus and had there involved apparently only one nerve, but the peripheral result was the same as in this case. How much the bulbar paralysis in the case presented complicated the laryngeal condition, it was difficult to say.

A Combined Intra and Extra-Nasal Operation for the Correction of a Congenital Concave Vertical and Lateral Deformity of the Nose, with Report of a Case.

DR. B. S. BOOTH, of Troy, read a paper with this title. The case reported was that of a woman with deviation of the septum and a saddle-bag deformity. On March 8, 1900, he had done an intranasal operation for the correction of the deviation, using cocaine and suprarenal extract. Two incisions* had been used, one dividing the cartilaginous septum at the most prominent part and the other that portion lying just anterior to the bony septum. After forty-eight hours the gauze and splint had been removed, and after irrigating the parts, replaced. On April 14, 1900, under ether the extranasal operation had been done. An incision had

* Besides the antero-posterior incision.

been made over the dorsum of the nose, and the nasal bones loosened and elevated. Pieces of gauze were now packed in each nostril to hold the bones in place. The next step was to relieve the pinched look of the nose. This had been done with a curved needle and catgut, which were made to take a circuitous course.† An aristol dressing was used, and it healed by primary union. The result was quite satisfactory. Little or no scar resulted because of the subcutaneous suture. The use of cocaine and suprarenal extract he believed preferable to general anesthesia in many cases. The patient had died ten weeks after the operation from cerebrospinal meningitis.

DR. MAYER congratulated the author on his lucid description of an operation for saddle-bag nose. He had often wondered why some of the operations were not done externally. After extensive experience and much study of the comparative advantages of local and general anesthesia he had come to the conclusion that it was, on the whole, far better to employ general anesthesia in operations for septal deviations. The Asch operation, if properly done, was a painful procedure. The old method of dressing was to use packing with cotton wrapped about a tin splint soaked in 1 to 5,000 bichloride; the more modern dressing was with the tubes, and while the patient did not breathe altogether freely through the tubes, he inhaled some air, and this in itself acted as an excellent hæmostatic.

DR. T. J. HARRIS said that in a number of cases general anesthesia had been impracticable. He had lately used the cocaine and suprarenal extract, and had then used nitrous oxide gas for the minute or two during the breaking of the septum. This had answered admirably.

DR. MYLES said that lately he had cut the cartilage from the nasal spine and had extended the incisions up to and sometimes into the perpendicular plate of the ethmoid, something after the manner of the Gleason operation. It had proved a useful procedure in these extensive deviations. One tongue-shaped bevelled incision was frequently adequate. Certain cases required a straight incision, which extended from the curved one toward the bridge of the nose. He agreed with the last speaker regarding the statement that the chief pain was caused by breaking the bony septum.

† Drawing the soft parts on either side of the nose into place to fill in, or build up the pinched-like or concave deformity.

DR. T. PASSMORE BERENS said that so far nothing had been said about the occurrence of shock in nervous patients. This occurred even in some cases in which there was only very little real pain.

DR. QUINLAN thought that this patient had died from an infective basilar meningitis, as he had had a similar experience some time ago. Even if patients do not feel pain under local anesthesia, they often suffer a good deal of shock, and as it was totally unnecessary, the practice should not be encouraged when complete anesthesia, as it is administered to-day by experts, is really as safe a method as could be desired.

DR. BOOTH said that he had operated many times under local anesthesia in both men and women, and had experienced no difficulty. He used the gauze merely as a precaution against hemorrhage, and used the splint afterward. He had not observed any difference in the healing in the cases in which local or general anesthesia had been used. He thought the shock nearly as great from ether as from pain following the use of local anesthesia. The symptoms in the last illness of his patient had been distinctly those of cerebro-spinal meningitis, and he did not believe it was an infective meningitis.

LARYNGOLOGICAL SOCIETY OF LONDON.

SIXTY-SECOND ORDINARY MEETING, JANUARY 4, 1901.

F. DE HAVILLAND HALL, M.D., President, in the Chair.

The following cases and specimens were shown :

Clonic Spasm of Palate, Pharynx and Larynx in a Woman æt. Thirty.

Shown by SIR FELIX SEMON, M.D. I am indebted to my colleague, Dr. Risien Russell, under whose care the patient is at present at the National Hospital for Epilepsy and Paralysis, for permission to show her to-day. In order to avoid the case being duplicated, I beg to state expressly that the same patient was demonstrated by Dr. Russell before the Neurological Society a few months ago.

The patient, a married woman, who has had six children, of whom three are dead, and one miscarriage, and whose previous and family history are unimportant, came to the hospital in January, 1900, complaining of clicking noises in her head and curious movements in her abdomen. These movements were darting in character, as if there were something alive, and passed from the stomach into the throat, head, back and limbs with great rapidity. In October, 1899, she first noticed the clicking noise in her throat, which has continued ever since. It apparently has nothing to do with the darting movements in the abdomen.

On examination, the patient is a fairly well-nourished woman, with red hair, who lies or stands with her head thrown well back, the neck and chin thrust forward, the latter generally inclined to one side or the other, and the mouth is kept slightly open. A constant slight clicking sound goes on with an average frequency of about four per second. On looking into the mouth this sound is seen to be produced by rapid vertical movements of the soft palate associated with similar movements of the floor of the mouth. These movements go on whether the jaws are open, even widely, or closed; but if the chin is depressed into its natural position with the mouth closed the noise ceases, and the movements of the floor of the mouth cease, although she says she can still feel the palate moving.

The clicking sound is audible when she speaks, between the single words, but is said to cease, as well as the movements, during sleep. The movements on the whole are rhythmical, but are occasionally

interrupted by momentary irregular intervals, hardly lasting longer than a second or two, after which they recommence.

The epiglottis makes similar movements synchronous with those of the soft palate. These movements also take place in a vertical direction. The arytenoid cartilages and the vocal cords move with equal frequency and very energetically, but their movements are from side to side, not up and down. Like those of the palate and the floor of the mouth, they are occasionally interrupted for a moment, after which they begin again. Usually they are so energetic that, during quiet respiration, the inner surfaces of the arytenoids, when the inward movement is executed, touch one another, but the oscillatory movements continue even when the glottis is wide open. During phonation everything appears normal.

Externally the mylo-hyoid can be seen and felt contracting, whilst the whole larynx is constantly being spontaneously moved a little up and down, and at the same time somewhat forwards and backwards, the movements being energetic enough to be communicated to the examining finger.

Her memory, attention and intelligence are good, but she is distinctly depressed. She has no delusions except that she is sure she has something alive inside her.

The optic discs are healthy, the muscles everywhere well developed, and the movements well performed without inco-ordination or tremor. Reflexes everywhere normal, gait normal except for the position of the head described above, and nothing abnormal found on examination of the abdomen.

Speculation as to the cause of this peculiar clonic spasm, as to its mechanism, and as to the exact localization of the focus of irritation appears, in the present state of our knowledge, idle.

It is only desired to put the case on record.

DR. LAMBERT LACK wished to call the exhibitor's attention to a paper he contributed to THE LARYNGOSCOPE in 1898, in which, under the title of "Pharyngeal Nystagmus and Allied Conditions of the Pharynx and Larynx," he had described several cases similar to the one now shown. The speaker and Dr. Bond had each brought a similar case before the society, although their cases were less marked and the movements were limited to the pharynx and soft palate. As far as Dr. Lack had been able, he had collected in the paper referred to all the previously recorded cases of spasmodic and tremulous movements of the pharynx and larynx. He found they could be divided into two distinct classes: (1) The most severe and extensive cases, which were usually due to some gross lesion of the central nervous system, *e. g.*, cerebellar tumors, etc.; and (2) the

milder cases, which were of reflex origin and apparently due to some small local lesion, *e. g.*, post-nasal catarrh, pharyngitis sicca, etc.

DR. HERBERT TILLEY related a minor case of the same affection occurring in an adult, in which only the left side of the pharynx showed constant spasmodic movements which extended the whole length of the pharynx. The affection supervened on a carriage accident—the patient was thrown out and suffered severe concussion and bruising. The patient's speech was becoming very indistinct, knee-jerks absent, tongue tremulous, and the pupils responded to Argyll-Robertson's test. The diagnosis in the case referred to seemed to point to incipient general paralysis of the insane.

DR. WATSON WILLIAMS believed that instances of clonic pharyngeal spasm were not so very uncommon in general paralysis. The vocal cords were more rarely implicated. It seemed to him that these convulsive tics were possibly the analogue (bulbar) of psychic tics (cortical), and they were sometimes associated, for echolalia and coprolalia had been observed in association with clonic pharyngeal spasm by Kellogg.

DR. CLIFFORD BEALE called attention to the fact that the movement of both larynx and pharynx ceased directly the patient's attention was drawn to the acts of phonation or respiration. The cases which Dr. Lack had referred to differed in this respect from the one under discussion.

DR. SCANES SPICER considered the sucking noise to be produced in the larynx by the separation of the moist opposed surfaces of the arytenoid pyramids, for the sound continued unaltered when the soft palate was firmly pinned against the spine. He had an impression that Sir Felix Semon had shown a somewhat similar case before, but unilateral, and in which the orbicularis palpebrarum of the same side was affected.

MR. CRESSWELL BABER remarked that pharyngeal spasm was not uncommon; it was described as a clicking noise, and as objective tinnitus; he had not seen laryngeal spasm, or any case in which the spasm took place so rapidly.

SIR FELIX SEMON, in reply, agreed with Mr. Baber's observations. He had seen several cases of "clicking" palate, but in these the spasm was limited to the soft palate and did not affect the larynx. He was grateful to Dr. Lack for drawing his attention to his paper in *THE LARYNGOSCOPE*, which was unknown to him. He was unaware that anything like his case had been previously described, although he knew that Gerhardt had mentioned tremulous movements of the vocal cords as the only sign of a cerebral tumor pressing upon the temporal convolutions.

[*P. S.*—Since making the above statements, I have learned from Dr. Lack's very interesting paper in *THE LARYNGOSCOPE*, June, 1898, that several similar though not quite identical cases have been described.—*F. S.*]

Chronic Frontal Sinus Empyema Treated by Kuhnt's Radical Operation.

Shown by DR. HERBERT TILLEY. A woman æt. forty-six, upon whom this operation had been performed. The symptoms complained of were constant left supra-orbital headache, chronic discharge of pus, and nasal obstruction (due to polypi) upon the left side.

In performing the external operation the anterior bony wall of the sinus was completely removed, the pathological products curetted away, a large opening made into the nose, the sinus walls painted with chloride of zinc, gr. xl ad ʒj, the cavity packed with iodoform gauze and the soft parts finally sutured with catgut for the other half of the wound. The end of the gauze was led out of the inner angle of the wound.

After five days some six inches of the gauze were removed, and the remainder of it after a further interval of four days. The sinus cavity seemed quite healthy, and external pressure was now applied to the soft parts so that they were pressed on to the posterior wall of the sinus, to which they had firmly adhered, thus obliterating the cavity. The patient was in the hospital seventeen days, and there has been no discharge of pus from the nostrils since the day of operation, five weeks ago.

Case of Cured Maxillary (Double), Ethmoidal and Frontal Sinusitis.

Shown by DR. STCLAIR THOMSON. The patient was a gentleman æt. forty-one, who had suffered from nasal suppuration for eight years. Twice in Natal, where he lived, he had had the alveolar tooth socket drilled, and the right antrum washed out for some months. The pus soon returned when the washing was discontinued. It was found that the frontal sinus on the same (*i. e.*, right) side was affected, and in hopes that the maxillary antrum only acted as a reservoir, it was simply drained through a tooth socket, while the frontal sinus was opened from the outside. As a result of this operation pus ceased to descend from the fronto-nasal duct which was obliterated, and the exposed part of the sinus filled with cicatricial tissue. But still pus oozed from the external corner of the frontal wound, and on placing the patient again under chloroform it was found that this proceeded from a diverticulum of the main frontal sinus, with which it communicated by a narrow neck which had been overlooked at the first operation. This pocket, running outwards and backwards above the outer orbit, had been opened up

and plugged so that it healed from the bottom, just as a mastoid wound does. It was a slow process, taking three months, but there was no disfigurement.

The maxillary sinus on the same side had been treated by the Caldwell-Luc operation, and the ethmoidal cells had been curetted. The left maxillary antrum was simply drained, as it appeared to be only of recent infection from the right side.

It would be seen that the patient was not disfigured externally, as the incision was well under the eyebrow. Internally the right nasal chamber had not been interfered with physiologically by the removal of the anterior ends of the inferior and middle turbinals. There was no pus in the nose, but a little dry scab formed daily over the ethmoidal-cells opening. The patient expressed himself as struck by the recovery of the sense of general well-being. He said that he felt ten years younger than at the beginning of treatment, and now knew that he was then growing prematurely old.

SIR FELIX SEMON suggested to Dr. Tilley that it would be worth while in cases of this nature, in which the whole of the anterior wall of the frontal sinus was removed, to put in a plate either of aluminum, platinum, decalcified bone, or of ivory. Such devices acted well in other parts, and why should they not in the frontal sinus region? Disfiguration might thereby be lessened considerably, or even be totally avoided.

DR. WATSON WILLIAMS remarked that at the Portsmouth meeting of the British Medical Association in 1899 reports of two cases of diffuse suppurative osteitis, following operations for frontal sinus empyema, were reported. He desired the opinion of members of the Society as to the possibility of increasing the risk of such an occurrence by putting pressure upon the frontal sinuses, after opening, curetting and cleaning them, as in the radical cure.

MR. CRESSWELL BABER said it seemed as if surgeons were now coming back to the operation of Kuhnt, who removed the whole of the anterior wall of the frontal sinus. He himself had shown at the Society a most refractory case, in which cure had resulted from resorting to this radical operation after all other measures had failed. The depression was not marked in his case, and the results were satisfactory. He asked, was it advisable to make a large opening into the nose or not? In the radical operation the discharge escaped on to the surface, and the sinus was filled with healthy granulation tissue. He took it for granted that the anterior part of the middle turbinate was removed previous to operation on the frontal sinus.

DR. SCANES SPICER thought that in both of these cases he would himself have removed much more completely the front part of the middle turbinated and anterior ethmoidal cells before operating externally on the frontal sinus. He had seen many cases presenting all the symptoms and signs of frontal empyema get well after this

procedure without the need of an external operation; and had found that even if this did not happen, the drainage of the frontal sinus into the nose was much facilitated by such free removal. While acknowledging the necessity for complete resection of the anterior wall in rare cases, he dreaded the deformity resulting, and thought that clearing out the anterior ethmoidal region well would render it still less often necessary.

DR. STCLAIR THOMSON, in reply, said that the anterior half of the middle turbinate was removed before the operation on the frontal sinus. The suggestion of Mr. Baber was one to be considered—whether it was not much more desirable to obliterate the frontal-nasal duct, and cut off all communication with the nose. He started in this case with the Ogston-Caldwell-Luc operation on the frontal sinus, and passed his little finger up the nose into the sinus. During the treatment he changed his mind, and succeeded, by exerting a little pressure, in cutting off the frontal sinus from the nose. The patient ran no risk of being reinfected because he now had no sinus. The idea of Sir Felix Semon was worthy of attention. He had a patient who told him that the bank clerk next to him had a platinum plate in his forehead, and feels very well. Other substances besides platinum might be used. In the *Medical Press and Circular* of recent date solidified vaseline was suggested for this purpose.

In answer to various questions DR. TILLEY said that he would only recommend so complete an operation in exceptional cases, because of the deformity produced. In some seven cases which he had previously shown to the Society equally good results had been attained with no deformity, and in these instances far less of the anterior wall had been removed. He had performed Kuhnt's operation in this case really to satisfy himself as to how much deformity it produced. He considered that there was very little, in fact no risk of septic osteomyelitis ensuing if the external wound was not sewn up at the close of the operation. To avoid the complication it was also wise to make a large opening into the nose, which had the additional advantage of breaking down the anterior ethmoidal cells, which were always diseased, and which, if left alone, were very liable to re infect the sinus, however carefully the latter was treated by curetting and disinfection.

Case of Epithelioma of the Tonsil and Glands in the Neck; Operation; Recovery.

Shown by DR. LAMBERT LACK. The patient, a man æt. fifty, came under my care one month ago, complaining of a painful lump in the throat. An ulcer was seen in the position of the right tonsil, about the size of a florin. It spread on to the posterior pillar of the fauces, slightly on to the lateral wall of the pharynx, and downwards to within a quarter of an inch of the tongue. The edges of the growth were hard and everted. No enlarged glands could be felt in the neck. As the man was willing to be operated on, and the case

appeared to be an eminently suitable one, a piece of the growth was at once removed for microscopic examination. The sections showed the growth to be an undoubted epithelioma.

The operation that was performed may be divided into four stages:

1. An incision was made along the anterior border of the sternomastoid, and the large vessels in the anterior triangle freely exposed. Some enlarged glands were found, and, together with the fascia over the vessels, were cleanly cut away. Ligatures were placed on the external carotid and some of its branches, but were not tightened. A pad of gauze was packed in between the carotids and the lateral wall of the pharynx.

2. Tracheotomy was performed, and a Hahn's cannula inserted.

3. The cheek was slit back from the angle of the mouth to the ramus of the jaw. A large sponge, with tape attached, was pushed into the larynx.

4. The pillars of the fauces were cut through with scissors, and the growth partly cut out with scissors and partly separated from the lateral pharyngeal wall by dissection with the finger. The wound in the mouth remained separated from the wound in the neck by a thin layer of fascia. There was no bleeding to speak of.

The temporary ligatures on the carotids was removed, and the wound in the neck and cheek sewn up. The tracheotomy tube was retained until the following day. After twenty-four hours the patient was able to swallow, and his further progress was uneventful. The wounds in the neck and cheek healed by first intention. The patient was allowed up on the seventh day, and left the hospital on the fourteenth day.

The patient was brought forward to illustrate the excellent immediate result that can be obtained by such an apparently severe procedure. The whole safety of the patient depends upon the wound in the neck not communicating with, and being infected from, the wound in the mouth. The danger of hemorrhage is entirely avoided by the temporary ligature of the vessels and the tracheotomy. The case also illustrates again the fact that even considerably enlarged glands in the neck may not be palpable, and the consequent necessity for an incision in the neck in every operation.

The PRESIDENT thought they would all agree in congratulating Dr. Lack upon the success which had attended his case. It was a perfect result, and one could not wish for a better either with regard to the completeness of the removal or the rapidity of the healing.

Bilateral Webbing of the Fauces.

Shown by DR. HENRY J. DAVIS. This is a woman, *at.* fifty-two, with bilateral webbing of the fauces. The webbing may be entirely the result of old ulceration, but the symmetrical appearance of these fine bands of tissue would seem to indicate cicatrization following ulceration of some congenital malformation of the faucial pillars, *e. g.*, an accessory palato-pharyngeus.

Since childhood speech has been indifferent, and she had "a sore throat for ten years at one time," which favors this supposition. She is suffering from tinnitus and deafness.

The PRESIDENT had no doubt at all that this was a case of ulceration of scarlatinal origin. He had seen a similar case following small-pox, but scarlet fever was the most frequent cause. He did not think for one moment that its origin was congenital.

DR. STCLAIR THOMSON had seen a similar case, which was even and regular, in which he could discover no history of syphilis or scarlatina. He had discussed the case with Mr. Bland-Sutton, who informed him that this defect did not correspond to any developmental defect.

DR. FITZGERALD POWELL had shown a somewhat similar case to the Society some time ago. At the time he thought the abnormality must be developmental in character, the posterior pillars of the fauces being attached low down to the posterior wall of the pharynx on both sides, each being very regular in outlines. The trend of the opinion of the Society on that occasion was that it was probably the result of scarlatinal or other ulceration. He thought Dr. Davis' case was due to this cause.

SIR FELIX SEMON, with great respect for Mr. Bland-Sutton's opinion, begged to differ from the statement attributed to that authority. He thought that such cases might be developmentally explained; there was no doubt of the existence of quite a number of cases with slits in the anterior pillars of the fauces, absolutely symmetrical, without any ulcerative agency to account for their presence. He promised to bring before the Society a drawing of a case of his own bearing on that point, and he remembered that similar cases had been described by Professor Lefferts. With regard to Dr. Davis' case he would be probably found to be in a great minority; but he agreed with Dr. Davis that this case very likely represented a mixture between arrested development and acquired ulceration.

DR. WATSON WILLIAMS' impression was that this was a mixed case, in which there had been nine or ten years ago a sore throat with an ulcerative process going on; but the symmetrical condition of the faucial webbing suggested a congenital origin. The patient said she had not noticed it before. He himself had had a patient brought before his notice who did not know he had anything the matter with his throat, but he was found to have almost absolutely

symmetrical webbing on either side of the fauces, very similar to this patient; in that case the condition was of congenital origin. He promised to show the Society a drawing of this case.

DR. CLIFFORD BEALE thought it was a matter of considerable interest to determine whether these cases were due to scarlatinal poison in the first instance. In favor of such a view was the distribution of the splitting of the palate, which followed the lines of inflammation of the soft palate, so often seen at the onset of scarlatina. Against the theory, however, was the fact that, although in the course of hospital practice, one may examine a very large number of throats which have been affected at some time with scarlet fever, such clefts, apart from cicatricial contraction, were rare.

DR. HERBERT TILLEY was of opinion that the pharyngeal appearances were the result of ulceration, and most probably post-scarlatinal in origin. He had recently seen an almost identical case in a lady who had consulted him for deafness, which was also post-scarlatinal in origin.

MR. BABER had no doubt that it was due to previous ulceration in the throat.

DR. DUNDAS GRANT suggested that a drawing should be made, because the case presented its features in a remarkably striking way. It seemed to him that the congenital condition was represented on the right side of the throat, but on the left side that there had been an abscess contemporaneously with the acute suppurative otitis due to scarlet fever, which she had as a child. He had seen in the fever hospitals several cases among children where such a condition existed as that on the tonsil of the left side produced by scarlatinal peritonsillar abscess.

DR. DAVIS said the patient had always had some impediment of the speech and a periodical sore throat; one such "had lasted for ten years about fifteen years ago." What she complained of was tinnitus and internal and middle-ear deafness. He would try and get a drawing.

Case of Enlarged Thyroid Cured by Iodide of Potassium.

Shown by DR. DAVIS. This young woman came under my care last June, at the London Throat Hospital, with a large pulsating asymmetrical swelling of the thyroid, causing dyspnea, stridor, and considerable functional derangement; a very rapid pulse but only slight proptosis were present. The "tumor had been growing for eight years, but had suddenly grown rapidly, getting larger whenever she had a cold."

The patient asked for time to consider operation, which at that time seemed the only treatment. She was treated with five grains of potass. iod., five grains of ferri et ammon. cit. in a mixture; and she was ordered to rub equal parts of ung. potass. iod. and ung. hydrarg. biniodidi into the neck every night. She also inhaled the vapor of iodine crystals in a saucer.

In six weeks the tumor disappeared, all other symptoms rapidly subsiding. The iodide treatment was left off four months ago, and the thyroid showed signs of swelling, which again vanished under the same treatment.

The girl, beyond being slightly anemic, is now perfectly well.

MR. SPENCER said he should not use the word "cure," although good results, as in this case, did very often follow treatment by iodide of potassium and thyroid tabloids; but recurrence happened sooner or later, and surgery ultimately had to be relied on for the treatment of the masses containing cysts, etc. The tumors had a tendency to subside and come back, especially in young patients, such as that of Dr. Davis.

DR. DAVIS said he did not literally mean "cure," which perhaps was not quite correct. All symptoms had disappeared under iodide, then recurred; and under a further course of iodide and ointment (biniodide) had again disappeared. The patient was now under no treatment. There was a small cystic swelling on the right side, which was hardly noticeable. When he first saw the patient, in June, the goitre was a very large one.

DR. STCLAIR THOMSON said that in decided thyroid tumors medicinal treatment was of little use. He had lately had the opportunity of discussing the subject with Professor Kocher, of Berne, whose experience in the question was unsurpassed, and who said that patients must make up their minds between putting up with the inconvenience of the growth or submit to the knife. He preferred cocaine as an anesthetic.

DR. FITZGERALD POWELL said in his experience medicinal treatment by iodides and iron was certainly of great use. He had had a number of cases of cystic goitre in which the cysts had been reduced, but this was not always the case, and then operation became necessary. The iron was largely answerable for the improvement in some of the cases, especially those occurring in young women with menstrual disorders and anemia.

DR. BENNETT supported the last speaker. He believed that permanent benefit frequently followed the use of iodides. One case especially occurred to him, in which the patient consulted a leading London specialist, who advised operation. The patient afterwards desired to try medical treatment first, and he had given iodides with excellent result. The patient had remained free from the trouble now for several years.

DR. BALL said that formerly he was in the habit of treating those cases with iodides internally and iodine preparations externally, and that he often got apparent cures. For the last seven or eight years he had completely abstained from employing any special treatment, and he had got precisely the same results. Some cases improved spontaneously, as they did formerly under iodide treatment. He had absolutely no belief in the efficacy of any specific medicinal treatment of goitre.

DR. DONELAN remarked that medicinal treatment produced no permanent benefit. It caused a contraction of the gland, which might be compared to the effect of the injections which were formerly so much in vogue. The gland diminished, and remained small for a considerable time, and treatment was abandoned; but later the growth increased more rapidly than previously. These cases, in his opinion, did as well without as with medicinal treatment; the severe cases all eventually came into the hands of the operating surgeon.

SIR FELIX SEMON called to mind that Sir Morell Mackenzie once told him that he had injected iodine in the case of a patient who had previously asked him if there was any danger in it. Sir Morell Mackenzie, speaking from the experience of hundreds of cases, had replied decidedly in the negative. The patient thereupon consented, but died five minutes after the injection in the consulting room. Speaking from twenty-five years' experience, he could say that he had cured a good many cases permanently by iodide.

DR. SCANES SPICER wished to emphasize the view that many of these thyroid enlargements were inflammatory in origin, being attended with local pain, tenderness, and rise in temperature. Such symptoms soon disappeared on rubbing in some mild preparation of iodine, even if they were accompanied by some of the signs of Graves' disease, such as tachycardia, palpitation, and exophthalmos. He had no doubt they sometimes went away by themselves, as Dr. Ball had observed.

SIR FELIX SEMON wished to define his previous statement a little more accurately. His experience was that soft and absolutely parenchymatous goitres, especially when occurring in young girls, were favorable for the iodide treatment. With iodine and iodide of potassium—internally and externally—in the form of ointment and mixtures he had effected a good many cures. In cases where cysts or fibroid elements developed, the medicinal treatment, needless to say, was not nearly so successful. In the case under discussion he could not see any inflammatory action whatever.

DR. BRONNER said many cases which had resisted iodide of potassium were controlled by tabloids of iodothylin.

DR. WATSON WILLIAMS mentioned a case of goitre which had been cured many years previously by purely medicinal treatment at the hands of Sir Felix Semon. There was now not a vestige of the tumor.

The PRESIDENT referred to the injection of iodine. At one time he had used it extensively, but entirely abandoned it, owing to the death of a well-developed young guardsman, who died within a minute of the injection.

A Case of Swelling of Left Cheek and Eyelid.

Shown by DR. DAVIS. For two years this patient, a female æt. twenty-three, has had a puffiness of the left lower eyelid, with swelling over the root of the nose and left upper jaw. On the sup-

position that she had antral disease the antrum was opened through the socket of an extracted molar. She wore a plug, and was under treatment for nine months. No disease was found, and nothing in the nose—beyond some slight enlargement of the middle turbinals—can be found to account for the disease. The nasal duct is free. The swelling is worse in the morning and late at night, but varies in the course of the day, and it appears to me to be lymphatic in nature. Her condition is unaltered by treatment. There is no albumen in the urine, and the general health is good. It may be a case of angioneurotic edema.

DR. BRONNER said these cases were fairly common, but seen more by ophthalmic surgeons. They always occurred in young women. Their nature was unknown, and they were generally unilateral.

DR. SCANES SPICER had seen the condition associated with ethmoidal cell suppuration.

DR. WATSON WILLIAMS regarded it as a case of recurrent erysipelas. It occurred in fairly definite attacks at the outset, followed by periods of quiescence, and leaving more and more persistent thickening. He had had two or three cases, but did not know what to do for their treatment.

MR. DE SANTI had shown a case to the Society in a similar condition, except that it was more extensive; it resembled the description given by Dr. Watson Williams. His case was apparently due to a mosquito bite. He considered the condition was one of lymphatic edema, and probably due to the specific cocci of cutaneous erysipelas.

DR. DAVIS said the swelling had gradually increased eight years, and had then suddenly grown more rapidly. After taking iodide internally, and ung. pot. iod. and ung. hyd. biniod. externally, for about a month, it began to disappear rapidly.

Recurrent Angiofibroma Involving Ventricular Bands and Vocal Cords.

Shown by DR. FURNISS POTTER. The patient, a man æt. forty-two, came under observation in the summer of 1899, complaining of hoarseness, which had come on gradually. On laryngoscopic examination the anterior third of the glottic space was seen to be filled, and the anterior thirds of both cords were obscured by (what appeared to be) a trilobed tumor, which on further examination with probe, and on subsequent removal, was found to consist of two parts, one attached to the left ventricular band—on microscopic examination reported as simple papilloma—the other attached chiefly to the right ventricular band, and involving also the right vocal cord, the upper surface of which presented a ragged, torn-looking surface.*

* A section of this was exhibited at this Society November, 1899, and was reported on by the Morbid Growths Committee as angiofibroma.

The case has been under constant observation, and has continued to recur, notwithstanding that several removals have from time to time been effected with snare and forceps whenever the growth has become sufficiently protruding to be seized with instruments.

The surface now involved is more extensive than when first seen, the anterior commissure and left ventricular band and cord (?) being considerably affected.

During the last few months the patient states that he has had several attacks of hemorrhage, on which occasions he has coughed up about a teaspoonful of blood. He suffers from much vocal disability, which seriously interferes with his occupation—a builder's foreman—which necessitates much use of the voice.

He would be glad to have any suggestions for further treatment other than what had been pursued.

The PRESIDENT would call this case by another and more grave name, *i. e.*, malignant disease of the larynx.

DR. CLIFFORD BEALE commented on the free movement of the cords in the case, and asked how far one was justified in ignoring the rule that cancerous growths of the larynx usually produced impaired movements. The appearance of the growth itself certainly suggested malignant disease.

SIR FELIX SEMON said he had defined his position with regard to the question of mobility of the affected vocal cord in malignant disease of the larynx so often and so precisely before, that he was sorry there could still be any doubt on that point. It depended entirely on the depth of the infiltration whether or not there was any impairment of movement. If the disease was somewhat superficial there might be free movement, even though the affection be already rather extensive; whilst, on the other hand, in a case of deep infiltration there might already be defective movement, though the actual outgrowth was still small. The question, therefore, stood thus: the absence of defective movement was no counterproof to the existence of malignant disease, whilst its presence in cases where it was doubtful whether a growth was innocent or malignant was a valuable aid to diagnosis.

MR. WAGGETT said Dr. Potter asked him to get the opinion of the Society whether it was desirable to do a thyrotomy, in order to see what the condition really was.

MR. SCANES SPICER inquired if the patient had had a course of iodide of potassium.

MR. DE SANTI said the sooner thyrotomy was done the better. He advised an exploratory thyrotomy.

Recurring Nasal Polypi.

Shown by MR. DE SANTI. A girl, *æt.* eighteen, suffering from persistently recurring nasal polypi. She had been under constant

treatment at various hospitals for four and a half years before coming under his care at the Westminster. The polypi had been removed innumerable times by means of the snare.

He found large masses of toughish polypi in both nostrils, occupying the whole of the cavities; there was marked "frog face;" microscopically they consisted of mucous and fibrous tissue. He took the patient into hospital, and under a general anesthetic turned up the nose by dividing the reflection of the mucous membrane of the lower lip and gums, and thus got at the polypi; these were removed with the aid of suitable forceps and curetting. The patient remained free from the growths for some six to seven months; they then recurred, and subsequently another free removal under an anesthetic was carried out; there was immunity from the growths for eight months. Now the patient is again in much the same condition as before. From the general appearance of the polypi and the free suppuration going on, Mr. de Santi considered there was accessory sinus suppuration. In connection with the last meeting of the Society, when the treatment of nasal polypi was under consideration, he brought the case forward as showing the results of the different methods of treatment and their failure. He was anxious to know if Dr. Lack's method of operation would be generally recommended, though one of Mr. de Santi's two operations consisted, in his opinion, in very much the same technique as Dr. Lack's.

DR. HERBERT TILLEY had no doubt but that the case was one of chronic suppurative inflammation of the accessory sinuses. He had proved this as regards the frontal sinus, because the withdrawal of a probe passed into it was followed by a free flow of pus. Unless these accessory cavities were efficiently dealt with the polypi would continue to recur as they had done formerly. The breadth of the upper portion of the patient's nose was very suggestive of chronic ethmoiditis.

MR. DE SANTI asked Dr. Tilley if he was of opinion that the nasal polypi were secondary to frontal sinus suppuration in his case.

DR. TILLEY said emphatically that this was his view.

Growth of Right Cord in a Man æt. Thirty-Five. (Patient and Specimen.)

Shown by DR. W. H. KELSON. Patient was shown at the end of last summer session, and, as there was some difference of opinion about the case, the President had requested that it be shown again, but as the patient is a teacher the growth was removed from the right vocal cord in August. The microscope showed it to be a papilloma.

DR. FITZGERALD POWELL remembered having seen this case when it was shown to the Society at a previous meeting. There still appeared to be a small portion of growth remaining below the anterior commissure which might have to be removed.

DR. KELSON thought there might be a small papilloma below the cord on the right side. The patient had recovered his voice, and had passed an examination in singing, and so he thought it better to leave it alone at present.

Lupus of the Pharynx.

Shown by Mr. R. G. JOHNSON for MR. RICHARD LAKE. This patient states she has suffered from "ulcerated sore throat" with dysphagia since November, 1899. There is no history of phthisis or of syphilis, congenital or acquired.

In April, 1900, the tonsils were removed, immediately after which her voice became affected.

At the present time there are well-marked signs of phthisis at the left apex.

On examination the whole of the uvula, both posterior pillars of the fauces, the left tonsil, a small part of the soft palate to the left of the uvula, the surface of the lingual tonsil, what remains of the epiglottis, the ary-epiglottidean folds, with the arytenoids and ventricular bands, are seen to be involved in a lupoid process, which is, however, in a fairly stationary condition.

DR. DAVIS had seen the case in the Middlesex Hospital; a piece was removed from the tonsil, examined, and pronounced to be lupus.

Case of Bilateral Abductor Paralysis.

Shown by Dr. J. B. BALL. A young man, æt. twenty-four, admitted recently to the West London Hospital for a hematocele of the testicle. Surgical interference being considered desirable, ether was administered. While under ether, and before the operation was begun, his breathing stopped and he became cyanosed. Artificial respiration was performed, and air began to enter with loud stridor. Artificial respiration was kept up for about ten minutes, but the stridulous breathing continued for three-quarters of an hour. The next day Dr. Ball was asked to examine the larynx. The condition present is that of bilateral abductor paralysis. It is not quite typical, however. There is some obliquity of the line of the glottis and some asymmetry of the cords. The history points to the condition having existed for a very long period, if, indeed, it was not congenital. The patient states that, as long as he can remember, his breathing was noisy and difficult on the least exertion. His

mother states that as an infant his breathing was always troublesome and frequently crowing in character, and that when he was born he was not expected to live owing to his difficult breathing. The knee-jerks are present, and there is no sign of disease in the chest. Patient has not had syphilis.

MR. SPENCER said it was a very curious-looking larynx. One cord was completely paralyzed. The left cord, however, retained a good deal of movement. It might be congenital or syphilitic in origin. The question was: What would happen to the boy? Was it safe to allow it to go on as it was? There was not much room there, and with a little inflammation he might soon get into a dangerous condition.

DR. WATSON WILLIAMS thought the right vocal cord appeared quite fixed, and there was certainly movement of the left cord. He suggested that some old inflammatory mischief caused fixation of the right cord, and that the present condition of the left, viz., abductor paralysis, was due to some more recently developed affection. The increased pulse rate, ninety-six a minute, suggested the existence of a bulbar lesion.

SIR FELIX SEMON said he had laid it down many years ago as a rule that in every case of bilateral abductor paralysis, if medical or surgical treatment did not succeed in actually restoring the activity of the abductors, it was the duty of the laryngologist to perform tracheotomy as a prophylactic measure and rid the patient of the risk of suffocation. Since then, however, he had seen several cases in which fairly severe bilateral abductor paralysis had existed for many years with impunity. He reminded the Society that he himself had shown to it two such cases a few years ago, one of which he had already shown on the occasion of the International Medical Congress of 1881, *i. e.*, fully twelve years before his last demonstration. This had made him somewhat doubtful as to whether his previous dogmatism was justified; although, on the other hand, several cases had been recorded in which the non-observance of his rule had led to sudden death by asphyxia. His course now was to tell patients plainly how matters stood and leave them to decide. Certainly it did not increase the amenities of life to go about for years with a tracheotomy tube. On the other hand, an attack of simple laryngeal catarrh might put the life of the patient in danger at any time, as actually happened in the case from which he had deducted his rule.

DR. WATSON WILLIAMS mentioned a case *apropos* of Sir Felix Semon's remarks. The patient was brought to the Royal Infirmary at Bristol, and had marked inspiratory dyspnea with stridor. On examining the larynx he found well-marked bilateral abductor paralysis. No reason for it could be discovered. Bearing in mind the dictum laid down by Sir Felix Semon, he was tracheotomized. He was able to breathe very comfortably, and in the course of a fortnight, owing to the left thyro-arytenoideus internus having become paralyzed, he was able to do without the tube.

DR. BRONNER recommended the use of large intubation tubes in cases of abductor paralysis with difficulty in breathing. The tube should be worn for a few hours daily, or constantly if possible, for a few weeks; this in many cases permanently relieved the dyspnea.

THE PRESIDENT: It was a very difficult question to decide what should be done. There was a well-known member of Parliament some ten or eleven years ago, with more or less mechanical fixation of the cords; adduction was good, but abduction very incomplete. He was able to speak in the House. The condition, dating from small-pox, had existed upwards of thirty years. He caught a slight cold and died from laryngitis. Probably if something had been done his life would have been spared.

Specimen of Cyst. ? Dermoid.

Shown by DR. FITZGERALD POWELL. The specimen shown was removed from the floor of the mouth of a girl æt. sixteen years. The swelling which it caused was first noticed thirteen months ago, and had been gradually increasing in size.

When first seen I found, on examination, a considerable rounded swelling, extending from below the symphysis to just above the hyoid bone; it was movable, soft and fluctuating, and on looking into the mouth it was seen to push the floor upwards, and could be felt well back under the tongue; it had somewhat the appearance of a ranula, but was more regular in shape, and occupied both sides of the frænum linguæ.

I removed the cyst by a median incision through the skin, extending from just below the symphysis to just above the hyoid. The superficial structures were carefully divided, bleeding points secured, when the white glistening cyst wall was exposed, and by sweeping the finger round the growth it was easily enucleated and brought out. The wound healed by first intention, and little scar was left.

SAN FRANCISCO SOCIETY OF EYE, EAR, NOSE AND THROAT SURGEONS.

Regular Meeting January 24, 1901.

Henry L. Wagner, M.D., President.

DR. F. B. EATON presented a specimen of

Myxo-Fibroma of Nose and Naso-Pharynx.

He stated that it was the largest one he had ever heard of: but supposed there are perhaps others of the kind that are larger. The patient was a young fellow about twenty-three years of age. He was emaciated when seen at the hospital, and on opening the mouth this large tumor was seen extending down behind the pharynx, and at times hung down over the epiglottis. It was impossible to get the finger above the palate without using great force, the tumor filling completely the naso-pharynx and pharynx. Dr. Eaton first attempted to cut the tumor off with snare armed with No. 5 piano wire. He soon broke the wire. However, he cut off a piece about the size of the present specimen, and afterwards in his office, with a galvano-cautery snare, snared out the mass presented. This left the base, which occupied a portion of the roof of the naso-pharynx, and a portion of the middle turbinated near its posterior end, and a portion of the middle meatus of the nose, comprising about one-third of the middle turbinated bone on its under side.

A cautery electrode strong enough for the purpose was passed into the fossa meeting it with forefinger above palate, and thus the base burned little by little with moderate hemorrhage. The young man improved very much. He gained some twenty pound weight; but he returned a few months later having a return of the growth in his nose; that in the nasal pharynx never grew again. It was burned again in the same way. There was now always considerable hemorrhage. Patient was twenty-three years of age and Dr. Eaton was working to keep him alive until he was over twenty-five. This he did, as it is stated on the authority of Fletcher Ingals that in case of myxo-fibroma, if the patients could be kept alive until they were over twenty-five, there was a tendency to spontaneous arrest of the growth. However, the patient fell into the hands of a licensed quack. He laid his nose open in the so-called heroic way and attempted to extirpate the tumor, and the patient promptly died.

DISCUSSION.

DR. REDMOND PAYNE said he had exhibited a similar specimen at the last meeting, which hung in the naso-pharynx and reached the isthmus of the pharynx; it was somewhat elastic so that it would move; and was some five inches in length, when it was stretched out. It was the largest that he had ever seen. Dr. Eaton's specimen is certainly an extraordinarily large one. The statement that these cases have a tendency to spontaneously atrophy after the patient reaches the age of twenty-five seemed to Dr. Payne a little curious. He recalled only lately a case, a very large tumor in the naso-pharynx, probably one-third the size of Dr. Eaton's specimen. The man was thirty-two. It has shown no tendency to atrophy at all.

The PRESIDENT said that according to his experience he did not think that there is any rule that a tumor atrophies after a certain age. Dr. Eaton (closing discussion) said that he had made no statement that a tumor has a tendency to *atrophy* after patient reaches the age of twenty-five; but that after that age a nasal fibro-myxoma may not grow any more. There is an arrest of growth. This is quoted on the authority of Fletcher Ingals. Ingals does not say that a tumor atrophies, but that after the age of twenty-five these tumors may not develop further, but become stationary.

The PRESIDENT presented some cultures which he had taken from the ear and throat of a little child two and one-half years old, to which he was called in consultation. The little one showed at first an acute inflammation of the middle ear. He waited under expectant treatment for forty-eight hours, and then made a paracentesis of the drum. For a few hours no serous fluid was discharged from the middle ear; later some bloody serum did appear. The temperature was $102\frac{1}{2}$ at the beginning. On the third day the ear was nearly free of any discharge, and the temperature normal.

Forty-eight hours after this a fever of 104° set in, and as the ear did not show any symptoms, the throat was examined carefully. On the soft palate, and on the right tonsil, a white patch about as large as a middle size bean was found. Fearing these patches might be diphtheritic, a bacteriological examination was made, which revealed a staphylococcus pyogenes albus, and also Pfeiffer's bacterium. We should be careful of our diagnosis before a bacteriological examination is made. Five days after this the child was perfectly well.

The annual election of officers being in order, the following were elected: President, Dr. F. B. Eaton; first vice-president, Dr. L. C. Deane; second vice-president, Dr. R. D. Cohn; secretary, Dr. M. W. Frederick; treasurer and librarian, Dr. G. W. Merritt; members of the executive committee, Drs. E. J. Overend and G. P. Pond.

REGULAR MEETING, FEBRUARY 21, 1901.

F. B. Eaton, M.D., President, in the chair.

DR. ROBERT D. COHN presented a case of

Luxation of the Anterior Inferior End of the Quadrangular Nasal Cartilage

In a girl of nine. Symmetrical with the convexity in the left nostril was a corresponding depression in the opposite side. By inserting the index fingers reposition was easy, so that there could be no doubt as to the diagnosis. Relief was sought purely for cosmetic reasons.

As these cases are met with infrequently, and are passed over very lightly, if referred to at all in the text-books, the experience of those members present, especially as regards operative procedures, would be of value.

DISCUSSION.

DR. A. B. MCKEE said he thought the operation appears rather more formidable than it really is, and that he thought we get better results with operating. He made an incision in the mucous membrane and pushed it over to one side and simply pared off some of the soft parts. He did not think it necessary to put in a suture, but in some cases, perhaps, it would be advisable. The operation is a trifling thing, but the improvement is very marked.

DR. H. L. WAGNER said that what Dr. McKee just referred to he had done in every case with success—and successfully for the simple reason that if the projecting portion is dissected we will save the mucous membrane and just dissect off enough to make a covering. Burnett in his book refers to the number of times he has performed this operation, and gives a picture and description of the operation. Dr. Wagner had operated with less success and with a great deal of disturbance on patients where he found the septum thin and infractible at that portion, as the cartilaginous part of the septum may break, as in the case Dr. McKee just referred to. If we split off this portion (and it is very easy because cartilage can be cut like a piece of cheese), in nearly all cases no suture need be put in, and the cut heals up very quickly; in about two and one-half days is entirely well.

REGULAR MEETING, MARCH 21, 1901.

Dr. F. B. Eaton, President, in the Chair.

Dr. McKee read an essay on

Suppurative Middle Ear Diseases, Their Complications and Operations. This paper will appear in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

Dr. Martin in opening the discussion said that the field covered by Dr. McKee is so large that it was a difficult matter to decide just what points to pick out for discussion. The first case that Dr. McKee spoke of, which was a case of sinus thrombosis, reminded him of a similar case he had some time ago. Dr. McKee speaks of seeing it in a much better light now than at the time of making the operation. This case Dr. Martin would speak of was not in his mind a case of sinus thrombosis pyemia. He was called in this case and found patient with very high temperature, about 104° to 105° , great protuberance over the mastoid. He concluded to operate at once, which he did by gaslight with one assistant. He thought by freeing the pus he would relieve the trouble. Temperature was lower next morning. Did not go into the middle ear to clean it out thoroughly. Could not detect much granular tissue there. Two or three days later temperature rose from 105° to 106° . He opened up the wound again and called in a consultant who tried the pulse and advised giving a cathartic and temperature promptly fell next morning, and Dr. Martin was congratulating himself that it was a case of stomach trouble. However, the temperature did not stay down; went up again. He finally concluded on the third day to go in and curette it out thoroughly, which he did and the temperature never went up again. There was a small granular mass in the middle ear which accounted for this trouble.

The other cases are cases that we see continually. Dr. Martin had never had but one case of sinus thrombosis, and that he did not operate on. This case was of an engineer where the pus had burst out above the ear; it had burrowed out above the cartilage and he opened it above the ear at this point. Kept urging him all the time to have the operation performed, but he never got around to it, saying that he could not find a substitute. One day Dr. Martin was telephoned for. He took two assistants with him and went out to the house. Found the man had had to come from work. He was told that the only chance was to have the operation performed.

Called his wife in and stated the conditions to her and wanted him to have the operation. She said she would wait a few days. He was taken to the Electric Hospital three days later and operated on and left on the table.

DR. A. BARKAN said that several points in Dr. McKee's paper had impressed him. He was inclined to think most of the blame in serious cases where there was hesitation and faulty interpretation, lies on the shoulders of the consultant being a surgeon, or still worse, being the family physician. There is always something wrong with the bowels or some excuse found here and there, whereas if we were to approach the case alone we would say this is clearly a case of serious importance, and affecting the brain. He was strongly reminded of a number of cases, but would mention only one.

One Saturday afternoon a German brought his wife and little girl. The child was about twelve years of age, and while she was even crossing the entrance to the office Dr. Barkan was struck immediately by the pale, fevered appearance of the child. On removing the handkerchief from the child's head he found a mountain of pus running out from her ear, such as he had never seen. Feeling her pulse he inquired how long she had been affected, and told them they had a very serious case and tried to get her to the hospital, but they had a comfortable home and would not have her taken there. He told the mother and father that he was quite anxious about the case. The next morning he went over to the house feeling quite anxious and had made up his mind unless the child was better that morning he would open the mastoid anyway and look in. To his astonishment he found the child greatly improved. Simply cleaning the ear had done a great deal of good. The child was cheerful. He did not see his way clear that day to perform the operation, and on Monday called again and found the child much worse. Temperature had gone up. He waited a couple of hours for the physician they wished him to meet in consultation and when he came at once a history of bowel complaint was sprung, and the whole manner of the man impressed him that he was afraid of losing the case. Even though he did not want to interfere with his case, he felt it his duty, however, to tell the parents that the case was very serious and that he wished to have an immediate consultation with a fellow specialist. That was the last he saw of the child. He was never called again. In about six weeks the father called at the office and asked the amount of the bill. The face of the man showed that he had lost his child, and that he knew he had made a very great mistake in leaving the case to the family physician.

We must not allow ourselves to be guided too much by consultants. If we think we are right, we should go ahead.

The second remark was with regard to cutting off of polypi. The case that Dr. McKee referred to he had seen, *and it has been a warning* to him to be very sure they are not those that spring up from the upper and posterior wall of the canal and from the roof of the tympanum, the most dangerous spot. These are the ones that MacEwan refers to in his warning, and those mistakes are very easily made, and we will do well to leave these alone unless we are sure what they are. He thought there was another point of interest; the meeting of the dura or sinus on the way to the antrum. Was it the dura or the sinus?

DR. MCKEE: The dura. It is higher up.

DR. BARKAN said he had had several cases of that kind, and in every case had simply gone ahead, cautiously removed the posterior wall and working carefully had reached the antrum.

DR. MCKEE closing the discussion said one point in regard to a case he mentioned, was that the man did not feel inconvenienced in any way with his work. In the operation he was not sure the mass uncovered was the dura. The assistant, who was a family practitioner, kept leaning over his shoulder and asking him if he did not think he was getting in pretty deep, etc. He could not make out any indication of the sinus at all. He made up his mind it was the dura. He has uncovered the sinus several times and has always recognized it.

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All papers marked (*) will be published in abstract in THE LARYNGOSCOPE.

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SELECTED ABSTRACTS.

Edited by

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with the collaboration of the

EDITORIAL STAFF.

I. NOSE AND NASO-PHARYNX.

Galvanism in Nasal Hypertrophy—JOHN B. GARRISON (New York)
—*Journal of Electro-Therapeutics*, March, 1901.

Under the title "Galvanism," the author describes a method of treating hypertrophic rhinitis, similar to that described by Dr. W. Scheppegrell, in the *Annals of Ophthalmology and Otology*, April, 1896, under the title "Interstitial Electrolysis." The author uses three to five milliamperes by means of the mono-polar method, and claims good results from its use. W. SCHEPPEGRELL.

II. MOUTH AND PHARYNX.

Recrudescing Angina Due to Friedländer's Bacillus—EMIL MAYER
—*N. Y. Med. Journ.*, December 22, 1900.

Friedländer's bacillus is frequently found in the mucous membrane of the bronchial tubes. Its first mention in pharyngeal disease was made by Max Stoss in 1895. He reported a pharyngeal affection occurring in a woman aged thirty, who was ill for eight days. At the right tonsil and pillar there was a white, rounded exudate culture from which showed the Friedländer's bacillus in pure culture. Such cases are not numerous. Five cases of different authors are given in abstract.

The author's case was that of a young lady, nineteen years of age, who is subject to deposits of whitish membrane over her entire pharynx and soft palate. The patient has been able to follow her avocation with only slight interruption. The daily ingestion of raw onions or the local application of strong solutions of iodine or nitrate of silver will keep off the membrane for a period of two weeks.

The membrane appears with a sense of tightness in her pharynx. After it is fully formed, long strips can be removed without pain. Microscopical examination showed no Klebs-Löffler bacilli. A bacteriological examination showed the presence of Friedländer's bacillus in a number of specimens. The detailed report is incorporated in the paper.

M. D. LEDERMAN.

Carcinoma of the Pharynx with Marked Involvement of the Cervical Glands in a Boy Fourteen Years of Age—T. M. ELDER
—Montreal Medical Journal, December, 1900.

Carcinoma of the pharynx is, so far as surgical literature shows, a rare disease, and the age of this patient makes this case even more remarkable. The patient sought operation for enlarged cervical glands, supposedly tuberculous, and gave the following history. The trouble began twelve months before as a stiff neck, followed shortly by a lump near the angle of the right jaw, which became as large as a hen's egg. The boy had had enlarged tonsils, and sleeps with mouth open, snoring badly; is thin, and losing flesh rapidly; the glands are enlarged around the right sternomastoid, and to a less degree around the left; the glands are hard and nodular; firmly fixed, not painful and with no tendency to break down; speech is nasal; temperature is normal. Mother died of hepatic cancer. Examination showed some naso-pharyngeal growth and relaxation of the palate, but the fixation of the jaws prevented further examination.

Under anesthesia, a large mass of indurated gland tissue on the right side of the neck was removed—the glands shelling out easily. All the structures were involved and infiltrated by the neoplasm, which cut like cartilage. There were a few small cysts in the mass, but no hemorrhagic spots. The linear incision closed and healed rapidly. The neoplasm proved to be carcinoma of the scirrhous type. Subsequently a small piece of the growth in the pharynx was removed, and it was then found that most of the vault of the pharynx was involved, with no tendency to pedunculate. This proved to be typical scirrhous carcinoma. Nothing farther was attempted. The boy was four years old when his mother died.

GIBB WISHART.

Tonsillitis—A. SANDNER—*Medical Summary*, December, 1900.

A very clever classification of tonsillitis is given by the author. viz.:

- I. Toxic tonsillitis, without any macroscopic visible exudate.
 - (a) Rheumatic tonsillitis.
 - (b) Catarrhal or influenzal tonsillitis.
 - (c) Tonsillar inflammation in connection with infectious diseases, scarlatina, measles, etc.
- II. Infectious tonsillitis, with exudate.
 - (a) Follicular tonsillitis.
 - (b) Diphtheritic tonsillitis.
- III. Suppurative tonsillitis.
- IV. Irritative or chronic tonsillitis.

The author describes in detail the well-known symptoms of above classifications.

E. D. LEDERMAN.

IV. LARYNX AND TRACHEA.

Papilloma of the Vocal Cords—Report of Five Cases—W. S.

BULLARD (Columbus, Ga.)—*Virginia Medical Semi-Monthly*, October 26, 1900.

In the cases reported there was recurrence in but one patient, and in this patient but once. This absence of recurrence in all but one case in an affection in which recurrence is especially persistent would be remarkable were it not that the absence of any microscopic examination of the cases treated shows considerable doubt upon the diagnosis.

W. SCHEPPEGRELL.

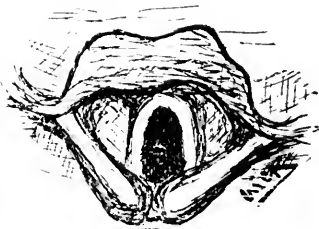
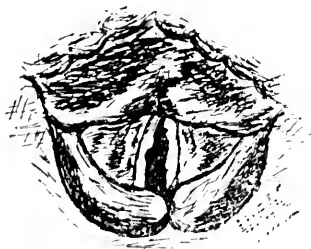
Syphilis of the Larynx—RICHMOND MCKINNEY (Memphis, Tenn.)

—*Memphis Medical Monthly*, November, 1900.

A careful description of the clinical history of pathology and diagnosis of this subject, illustrated by three cuts, the first show-



ing the destructive ulcerative process going on in epiglottis and vocal cords and the infiltrated and tumefied arytenoids; the second,



the infiltration of epiglottis, just prior to beginning of disintegrating process, and the third, the cicatricial stenosis of the larynx following tertiary ulceration.

W. SCHEPPEGRELL.

Intra-Tracheal Injections in Tracheo-Bronchial and Pulmonary

Affections—L. J. N. Fiset—*Le Bulletin Medical de Quebec*, August, 1900.

The desirability of submitting any inflamed area in the respiratory tract to such protected, isolated and antiseptic conditions, as

are maintained in external wounds by the surgeon is without question. Inhalations fail, because they produce cough, and insufflations because they produce spasms in the larynx, but intratracheal injections are direct and efficacious. This therapeutic measure was described by Green before the Academy of Medicine of New York, as far back as 1838, and the treatment of 106 cases cited. It is possible to introduce a quantity of antiseptic fluid into the trachea and to direct the solution to the desired locality in the respiratory tract by securing an appropriate position on the part of the patient, and as a result to secure the isolation of surfaces turgescient and often excoriated, this protection against irritating contacts, and an anesthesia of the nerve endings, the constant irritation of which was producing the distressing cough and labored breathing. The solutions must be introduced by the aid of the laryngoscope and after cocainization of the larynx. The author has treated ninety-seven cases during the last four years, in this manner, the average number of injections was eight, and the average amount of each 5ss. Injections were made every second day—5i every three minutes until the required amount was administered.

The base of the solution was preferably albolene and next glycerine. The drug varied, embracing menthol, 18%; guaiacol, 2%; turpentine, 3%, or ichthyol, 10%. The results of the treatment were uniformly favorable, notably in the laryngo-tracheal cases, of which there were nineteen, and each application was followed by a distinct fall of temperature and lessening in the expectoration and cough.

GIBB WISHART.

Safety Pin in the Larynx—Removal by Tracheotomy—WALTER

A. WELLS (Washington, D. C.)—*Virginia Medical Semi-Monthly*, February 22, 1901.

An interesting case of a colored girl of thirteen who had inhaled a safety pin into her larynx. A laryngoscopic examination showed one end of the safety pin between the posterior half of the vocal cords projecting perhaps about one-eighth of an inch above them. It was removed by tracheotomy. The points of interest in the case are as follows:

First—the length of time (ten days) that the foreign body existed in the larynx with such slight and unimportant symptoms.

Second—The fact of the early and complete recovery of the voice, notwithstanding the pin had been so long in the larynx; that it was an open pin, and must have lacerated the membrane in the attempt to remove by intralaryngeal method, and notwithstanding the extent of the external operation (cricoid cartilage having been cut through.)

Third—The unusual construction of the safety pin, it not having the hooded form at the end, made for the fastening of the pin, as generally seen, which led to misconception of the position of the pin in the larynx.

W. SCHEPPEGRELL.

VI. EAR.

A Case of Suppurating Ears of More than Twenty Years Duration, with Impending Insanity, Cured by the Removal of Adenoids—FAYETTE C. EWING (St. Louis)—*Interstate Med. Journ.*, October, 1900.

Large, phlegmatic German woman, æt. thirty-four, with complete nasal stoppage and suppurating ears from adenoids. Patient was so melancholic as to be incapacitated for her household duties.

Ears were cured in a week by adenectomy, and mental and physical health completely restored. A. A.

Surgical Indications in Purulent Ear Disease—A. D. McCONACHIE (Baltimore, Md.)—*Virginia Medical Semi-Monthly*, December 7, 1900.

After describing the clinical history of two cases of mastoiditis, the author summarizes the surgical indications in purulent ear disease as follows:

In acute cases—

(1) Removal of all obstructive conditions to respiration and proper ventilation of tympanic cavity, viz., adenoids, enlarged tonsils, deviated septum, spurs, enchondroses, polypi and hypertrophied turbinals.

(2) Enlargement opening in drum, if too small, to permit free drainage.

(3) Opening of the mastoid, if discharge continues after three or four weeks of persistent antiseptic cleanliness.

In chronic cases—

(A) Careful removal by the auditory canal of granulations, polyp or necrotic tympanic structures as thoroughly as you can.

(B) Discharge continuing, the mastoid operation must be done.

(1) For the removal of necrotic bone, either in tympanum or mastoid antrum and cells, as this is the only means of eradicating the germs of infection.

(2) When granulation and polypi recur after removal.

(3) In long-standing purulency, which cannot be arrested otherwise, even though the patient is not suffering, to prevent further complication.

(4) Tuberculosis and cholesteatomatous processes can only be removed by the mastoid.

(5) Relapsing cases should have the radical operation done to prevent complications.

(6) In abscess of the brain, cerebellum or sinus thrombosis, having their origin in purulent ear disease, the preliminary mastoid operation should be done.

(7) After a fair trial by these radical means and purulency continues, the mastoid operation is the surest and safest way of eradicating it.

(8) The mastoid operation, when done early, not only saves and improves hearing, but in many instances averts death through complications.

W. SCHEPPEGRELL.

VII. MASTOID AND CEREBRAL COMPLICATIONS.

Middle-Ear Disease in its Relationship to the Cranial Cavity, with an Abstract of Five Cases, Explanatory of Illustrations

—OTTO STEIN (Chicago) and CARL BARCK (St. Louis)—*St. Louis Med. Rev.*, March 9 and 16, 1901.

In this paper, which is of considerable length, the author covers his subject rather completely. The particular point of entrance of the infection into the cranium he considers one of the most important matters, as deciding the exact locality of the complication. First of all we are to look along the lines where the various parts of the temporal bone articulate with one another. The petro-squamous and squamo-mastoid are the important ones. Other important anatomical points are considered.

In involvement of the cavernous sinus we are to consider the vessels tributary to it: (1) The superior and inferior ophthalmic veins; (2) sphenoparietal sinus, arising from a meningeal vein; (3) central vein of the retina; (4) inferior anterior cerebral vein.

The central vein of the retina communicates with the superior ophthalmic vein, but according to Henle it often empties directly into the cavernous sinus. This Stein considers of importance; it explains the Graefe theory of "congestive papilla." But the theory is not always tenable, since in case of obstruction of the cavernous sinus, when the retinal vein empties into the superior ophthalmic vein, the blood may find an outlet through the facial vein, with which it communicates, and hence in such a case no marked congestion of the papilla would exist.

Clot in the cavernous sinus by damming back the blood in its tributary veins, causes edema of the eyelids, conjunctiva, forehead and nasal mucous membrane. This condition exists first only on one side, but soon spreads to the opposite, owing to an extension of the clot to its neighboring sinus by way of the transverse and circular sinuses. Of this Stein gives an illustrative case.

He gives also many data concerning the symptoms and location of abscesses of the brain.

The differential diagnosis, Stein points out, is of the utmost importance to the operator. While the symptoms of sinus thrombosis and abscess stand out in bold relief from one another, where we have a combination of conditions, as very often occurs in cases of sinus thrombosis and cerebellar abscess, we may find ourselves with a difficult problem to solve, though the route is the same. This abstract will afford an outline idea of this valuable paper. Five cases are appended by Dr. Carl Barck explanatory of illustrations.

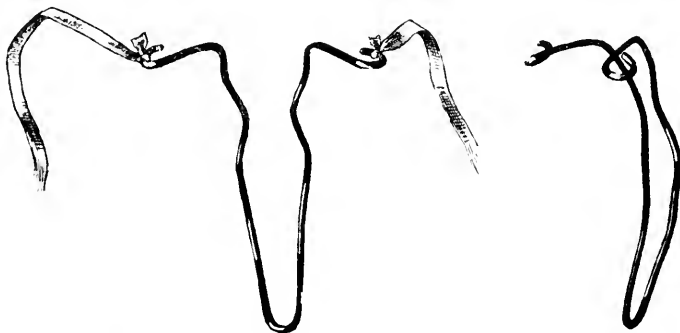
EATON.

IX. NEW INSTRUMENTS.

Regional Minor Surgery ; Tracheotomy—GEO. G. VAN SCHAICK
—*Internat. Journ. Surg.*, March, 1900.

Tracheotomy is an operation that every medical or surgical practitioner may be called upon to do at a moment's notice, and when he is totally unprepared. It has often been done with a pocket-knife as the sole instrument at hand. It is a common fault to attempt to work through too short an incision. The usual steps of the operation, as rapidly performed, are described.

When the operation is one of urgency, and no tracheal tube is at hand, some makeshift must be employed. We may simply pass a strong thread in each lip of the incision in the trachea itself, and



Hair-pin bent to serve as temporary tracheotomy tube.

tie the ends behind the neck. This will open up a chink large enough to give good results for a short time, but must soon be replaced by a tube, or else the necessary tension on the threads will cause them to cut through the cartilages. The author has employed a hair pin, bent into an acute V-shape, with the tapes tied to the end of each arm, and has found it an efficient device. A piece of a large woven catheter may be transfixed with a safety pin and softened in hot water; being bent in the requisite shape it is then introduced and tapes are fastened to each end of the pin.

EATON.

BOOK REVIEWS.

Laryngeal Phthisis. By RICHARD LAKE, F.R.C.S., London. With thirty-six illustrations, twenty-one of which are colored. Philadelphia: P. Blakiston's Sons & Co., 1900. \$2.00.

Mr. Lake handles this—to the laryngologist—serious and interesting subject in his usual concise and original manner. We are unusually impressed with the paucity of our resources when we take up the large general text-books to seek out some new remedy, when baffled, as we so frequently are, in dealing with this formidable malady, and we welcome this monograph, which, while not redundant, offers all the resources of therapeutic art. The subject is one worthy of an extended treatise, and the author has considered every phase of tubercular laryngitis, and its complications. Many valuable formulæ, adapted to every emergency and idiosyncrasy are inserted, and the illustrations reproduce the various manifestations of the disease in a way satisfactory to the highest art. F. C. E.

A Treatise on the Diseases of the Ear, Including the Anatomy and Physiology of the Organ, Together with the Treatment of the Affections of the Nose and Pharynx Which Conduce to Aural Disease. By T. M. HOVELL, F. R. C. S., Edin., M. R. C. S., Eng. Aural Surgeon to London Hospital; Consulting Surgeon to Hospital for Diseases of the Throat, etc., etc. Cloth, 808 pages. Price, \$5.50. Messrs. P. Blakiston's Sons & Co., 1012 Walnut street, Philadelphia, publishers.

The second edition of this work is perhaps the most extensive treatise on otology as yet contributed by our British confreres. The author discusses every detail and every subdivision of his subject very minutely.

For a large special treatise this volume is unusually practical; this is perhaps directly due to the mechanical genius of the author as the work abounds with illustrations of his specially devised instruments, apparatus and suggestions. As a work of reference and as a guide to the otologist this book should be much in demand. M. A. G.

The Asphyxial Factor in Anesthesia, and Other Essays. By H. BEL-LAMY GARDNER, in R. C. S., England, L. R. C. P., London: Ballière, Tindall & Cox, 20 and 21 King William street, Strand, London. Price, 3 shillings, net.

We think this guide should be in the hands of every anesthetist. The author discusses minutely and clearly the technique, procedure and abstracts to satisfactory and successful anesthesia. The proper action in emergencies and those common cases that take anesthetics badly are considered in a way to impart much valuable information.

Part II of this monograph deals specifically with the administration of nitrous oxide and oxygen, ether and chloroform, and the transfer of a patient from bed to the operating table. F. C. E.

Manual of Diseases of the Ear, including Those of the Nose and Throat in Relation to the Ear. By THOS. BARR, M.D., Lecturer on Diseases of the Ear, Glasgow University; Senior Surgeon to Glasgow Hospital for Diseases of the Ear, etc., etc.; Revised and Partially Rewritten; 236 illustrations, cloth, 429 pages. Price, \$3.50. James Maclehose & Sons, Glasgow, Publishers.

In the third edition of this manual the author clearly expresses the purpose of the revision in his preface: "The most important changes will be found in the chapters dealing with the consequences of purulent diseases of the middle ear and their operative treatment. There is no doubt that a clearer knowledge of the indications for surgical interference, as well as improved methods for operation and after-treatment, have arisen during the past few years. The operations of Schwartz, Stacke, Kuster, and others, on the cavities of the middle ear, have undergone various useful modifications; the most important perhaps being the grafting operation recently introduced by Mr. C. A. Ballance."

In this manual the author presents the subject of otology in a practical, clear and concise form. There are many excellent original illustrations. All unnecessary descriptive parts of the text and details of etiology, pathology, etc., has been eliminated and the volume is eminently practical.

M. A. G.

Experimental Research Into the Surgery of the Respiratory System.

An Essay awarded the Nicholas Senn Prize by the American Medical Association for 1898. By GEO. W. CRILE, A.M., M.D., Ph.D. Second Edition. Philadelphia: J. B. Lippincott & Co., 1900. \$2.50.

This scholarly monograph was prepared with a view to making better understood a number of phenomena attending operations and injuries of the thorax. The several parts are taken up separately and an individual research made. Though the author declares that the discussion of all the subjects is not intended to be exhaustive, very valuable technical experimental evidence backs up his claims. There are fourteen chapters, including not only the surgical procedure and technique of injuries, operations, foreign bodies, the mechanism of drowning, etc., but the physiologic phenomena of certain abnormal conditions are elaborated upon instructively.

F. C. E.

The Medical News Pocket Formulary, New (3d) Edition. Containing 1700 prescriptions, representing the latest and most approved methods of administering remedial agents. By E. QUIN THORNTON, M.D., Demonstrator of Therapeutics, Pharmacy and Materia Medica in the Jefferson Medical College, Philadelphia. New (3d) edition, carefully revised to date of issue. In one wallet-shaped volume, strongly bound in leather, with pocket and pencil. Price, \$1.50, net. Lea Brothers & Co., Philadelphia and New York, 1901.

The same practical, handy little volume as of yore.

THE LARYNGOSCOPE.

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ST. LOUIS, MO., MAY, 1901.

No. 5.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

A NEW TECHNIQUE FOR THE REDUCTION OF TURBINAL HYPERTROPHIES.*

BY M. A. GOLDSTEIN, M.D., ST. LOUIS.

In no work in rhinology has there been more controversy as to the best method of treatment and technique than in the question of reduction of hypertrophy of the turbinal mucous membrane, and judging from recent literature on the subject there is still much diversity of opinion.

Turbinectomy, either partial or complete, and whether by means of specially devised saw, scissors, snare or spokeshave, has its many advocates; the cautery, both chemical and electric, and the snare have always been popular measures, and the use of astringents and caustics, such as nitrate of silver, chloride of zinc in strong solutions, applied by swab or spray, though considered back numbers in the light of modern rhinology, still has its adherents. Before offering my own suggestions it may be of interest to consider briefly the several measures of operative technique advanced for the reduction of hypertrophied turbinal tissue.

It is assumed that the cases under discussion are those of chronic hypertrophic rhinitis. The tissues most directly involved pathologically are the mucous membrane covering the inferior and middle turbinals, and the underlying erectile and vascular tissue, which, by hypertrophic change, is mainly responsible for the diminished calibre of the naris and the consequent difficulty in nasal respiration, and by encroachment posteriorly on the Eus-

* Read before the Western Ophthalmologic and Oto-Laryngologic Association, Cincinnati, O., April 12, 1901.

tachian orifice also constitutes the main factor in producing impairment of hearing.

Whatever the means employed to correct these conditions, the main point at issue is to increase the calibre of the nasal canal. The measure which will accomplish this purpose with the least destruction of tissue, greatest simplicity of technique and least discomfort to the patient is the one which should logically be given the preference. My objections to the old-fashioned application of caustics and astringents, applied diffusely over the nasal mucous membrane by swab or spray are that the results are ineffective, too much of the exposed tissues are subjected to the influence of the chemical, thereby destroying much useful epithelial covering, and above all, the effects are neither lasting nor satisfactory.

Where an extreme and radical measure is indicated, turbinotomy or turbinectomy certainly affords a solution of the problem if the only result to be obtained is to clear the nasal passage. In by far the majority of cases of chronic hypertrophic rhinitis which present themselves for treatment, we have to deal with the milder forms of nasal stenosis, where simple procedures may be instituted and the results be equally as satisfactory as those of turbinotomy. In this large proportion of cases, where a milder procedure may be profitably employed, the condition requiring attention is an hypertrophy of the soft tissues of the turbinal body. This includes the erectile and vascular tissue, mucous membrane and epithelial covering of the turbinate bone. In this class of cases there is but slight increase of the bony factor of the turbinal body.

Of the radical measures, turbinectomy by means of the spoke-shave has not received general encouragement because the operative technique will not permit a very careful guidance of the spoke-shave nor can the amount of tissue removed with this instrument be accurately gauged. Another important disadvantage to the employment of this measure is the fact that the operation is not practical or feasible when a partial turbinotomy is desired. In the technique, the spoke-shave must be adjusted over the projecting portion of the turbinal at its most distal point, and is manipulated only by a single forward pull. If the hypertrophy is mainly an anterior one, as is so frequently the case, I do not see how the spoke-shave can be well employed.

The wire snare, either cold or galvanic, is sometimes quite useful in removing well-circumscribed hypertrophies when the snare can be properly adjusted. Where the hypertrophy, however, is diffuse and extends along a considerable line of the turbinal, the snare is useless.

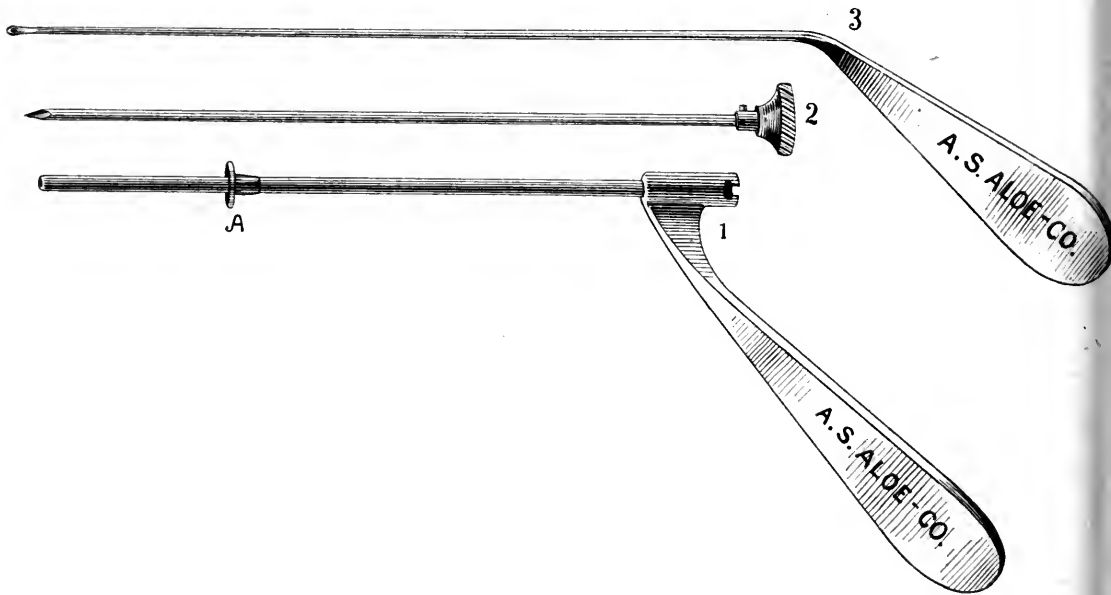
By far the most practical and successful means of technique in turbinotomy is that performed with specially devised scissors or saws. These instruments are better under control of the operator, the amount of tissue to be removed can be readily controlled and the instrument applied at any point along the turbinal body. My objections to turbinotomy or turbinectomy are: 1. The extensive destruction of the physiologically vital tissues in the nose. 2. The discomfort and pain to the patient; for it is usually quite a formidable nasal operation. 3. The frequency of post-operative hemorrhage and the difficulty in controlling same. 4. The possibility of infection to the naso-pharynx, ears and pharynx.

In considering the question of the cautery for the reduction of turbinal hypertrophy, I wish to emphasize the fact that this procedure is successfully employed only in the milder forms of hypertrophy of the turbinal tissue where the underlying bony structure is not involved in the pathological process. The usual application of the galvano-cautery, by which a deep linear furrow, extending the full length of the hypertrophy and penetrating the tissue to the bone, is a good practical technique as far as it goes. To obtain the best results, however, the cautery scar must be sufficiently large to produce a satisfactory adhesion of the soft hypertrophy to the underlying bone. This is the purpose of the technique and unless this is accomplished the result is more or less imperfect. To obtain a thorough scarring and adhesion to the bony structure of the turbinal body, it is frequently necessary to produce more than a thin linear incision with the galvano-cautery knife. As soon as we undertake to make a broad furrow with the galvano-cautery, we are confronted with the objectionable feature of destroying too much mucous membrane, and, in addition, the galvano-cautery frequently causes more sloughing than that produced by any other measure.

Of the chemical cautery I would say that a surface application of a bead of chromic acid or trichlor-acetic acid to the most bulging portion of a mild soft hypertrophy, will often give excellent results. This I have found to be the case in hypertrophied turbinals of children, especially where objections were entered to more extensive operative procedures. In the denser or hard hypertrophies this surface cauterization is but of slight practical value.

In November, 1896, Dr. Norval H. Pierce, of Chicago, published his suggestions concerning sub-mucus cauterization for the reduction of turbinal hypertrophies, and it is to a modification of this

technique to which I desire to call your attention. The principle of this procedure is rational, the technique practical and the results effective. I have employed this form of cautery reduction for several years successfully, and in well-selected cases have found this measure to fully meet all requirements and overcome the several difficulties of the other methods employed for turbinal reduction, as previously outlined.



Goldstein's Turbinal Trocar.

1. Trocar, with handle bent at an angle to permit best manipulation. 2. Obturator, with sharp point and bayonet fitting for locking in trocar. 3. Probe, with blunt end and handle at same angle as trocar. A. Sliding ring to indicate depth of penetration of trocar.

While the technique of the operation as suggested by Pierce appears fairly simple, I have found it difficult to carefully execute each step of this method. The first incision, as suggested, by igni puncture or specially guarded triangular knife, offers the first difficulty. I have frequently been unable to find this incision readily when ready for the next step; namely, that of introducing a probe and executing a groove or shaft for the application of the cautery. Then, too, when the hypertrophied mass is somewhat dense it is not easy to maintain the direction of a blunt-pointed

probe or director, and the instrument is likely to swerve from its intended course. Lastly, the introduction of the cup-probe, in the head of which is fused a bead of chromic acid, must be applied in the same groove from which the blunt director has just been withdrawn. Occasionally I have been unable to strike this groove.

To overcome these several objections and to simplify the technique I have devised a special trocar, armed with a sharp, well-fitting obturator and constructed so as to be easy of manipulation.

The technique of this modification of sub-linear cauterization is as follows: 1. The area to be operated on is cocaineized with a four per cent solution of cocaine, applied on a cotton tampon, and left in apposition with the hypertrophied parts for ten minutes.

2. The obturator is adjusted to the trocar and locked in position. On the trocar is a small sliding ring which can be adjusted to any length. The depth of the turbinal hypertrophy is then estimated and the ring adjusted on the trocar to the length of the hypertrophy undergoing cauterization. The point of application varies slightly with the amount of hypertrophied tissue, but is usually about a quarter of an inch from the muco-cutaneous junction. The sharp trocar is introduced at this point and is plunged deliberately into the hypertrophied mass, in a direction parallel to the turbinate bone and hugging the surface of the bone as closely as possible—until the ring guard is reached. This indicates that the instrument has penetrated to the depth previously estimated.

3. The obturator is now withdrawn from the trocar and the probe which may be cup-shaped at this end or blunt, and on which a bead of chromic acid has been carefully fused, is then introduced through the trocar to the area to be cauterized. This probe also carries a sliding ring-guard which may be adjusted so that the head of the probe projects about a quarter of an inch beyond the distal end of the trocar. The trocar is then slowly and gradually withdrawn and the position of the probe, projecting beyond the end of the trocar, is maintained until the instrument has been removed from the wound. In this way the entire turbinal area to be cauterized is brought in contact with the chromic acid, and it should also be emphasized that there is an even distribution by this chemical cauterization along the whole shaft.

4. I conclude this technique by an oily campho-menthol spray and introduce a cotton tampon saturated with benzoinol into the naris with the hope of producing mild and constant pressure on the hypertrophied mass during healing and cicatrization.

There is no hemorrhage; occasionally a few drops of blood appear at the point of entrance of the trocar in the anterior portion of the hypertrophy. The chromic acid serves the additional purpose of sealing the point of entrance.

The advantages of this simple, though effective measure over the other forms of reduction of turbinal hypertrophies are:

1. Simplicity of technique and the short time consumed in the performance of the operation. Any portion of the hypertrophied area along the entire line of the turbinal body, either anterior or posterior, can be reached by sub-mucous cauterization with but one small point of incision.

2. Freedom from pain to the patient, either during or after the operation. Many patients object to the more formidable operations by galvano-cautery or turbinotomy, and the deleterious and nervous influence on the patient is sometimes considerable.

3. No untoward after-effects. There is no post-operative hemorrhage. The possibility of infection is reduced to a minimum.

4. No destruction of physiologically vital tissues. There is no formation of synechia, as all inflammatory exudate is sub-mucous.

I have employed this method of reducing turbinal hypertrophies since it was first suggested four years ago, and am ready to report the results as permanent and satisfactory. The introduction of my modification of this technique greatly simplifies this method and I would recommend it as an easy, practical and effective method.

This special trocar may be obtained of the A. S. Aloe Co., 517 Olive St., St. Louis, Mo.

3858 Westminster Place.

THE EFFECTS OF EPIDEMIC INFLUENZA ON THE MUCOUS MEMBRANES OF THE UPPER RESPIRATORY TRACT.*

BY D. BRADEN KYLE, M.D., PHILADELPHIA.

While epidemic influenza, or la grippe, may not strictly be classed as an infectious or contagious disease, yet my observations convince me that there is as distinctive pathological alteration of structure as characterizes diphtheria, scarlet fever, or any of the contagious diseases. These alterations vary somewhat, it is true—in fact, they are controlled largely by the age and general condition of the individual; also, whether there has been any pre-existing disease of the structure, or whether the membrane was practically normal prior to the attack. This latter is an important factor, although age does not seem to exert much influence other than the general condition of the individual would, as in old age or in the young.

As you are aware, numerous bacteria, I believe in all some twenty-eight, have been described as the exciting etiological factor of la grippe. Pfeiffer's bacillus seems to have come off winner, and many writers consider its identity sufficiently established as to warrant its classification as the true etiological factor. Be this as it may, it has a curious way of affecting and penetrating certain tissues, cavities and locations of the mucous membranes, which is peculiar to itself. I have seen following the attack of la grippe, or associated with it, in most rapid succession an involvement of the middle ear, this involvement being of an infectious nature and rapidly going on to suppuration. I have seen both middle ears involved, with associated involvement of both mastoids, the involvement being rapid and virulently infectious.

As to the involvement of the frontal sinus, my own experience has been that such involvement takes place early in the disease and reaches the highest degree of its involvement during the height of the disease, while the ethmoid cells are involved early, or during the attack, and frequently continues as a suppurative ethmoiditis. It is true that in an ordinary coryza there is usually some ethmoiditis and that previous to, during and following the infectious fevers the ethmoid cells are often involved, but a peculiarity of ethmoiditis following grippe is its persistency and the

* Read before the Southern Section of the American Laryngological, Rhinological and Otological Society at Richmond, Va., December, 1900.

virulent infectious condition. The suppurative process seems unabating and the rapidity with which pus is formed is something alarming. I think in many cases that necrosis of the ethmoid cells occurs. I find, of the accessory cavities, the antrum is most frequently involved and when involved rapidly goes on to suppuration.

Tonsillar and peritonsillar involvement is quite common, the inflammatory process usually ending as a suppurative process with tonsillar or peritonsillar abscess. In some cases the peculiarity of the tonsillar or peritonsillar abscess is that for several days during the attack and afterward there is that peculiar raspy throat, sensitive, yet not markedly swollen, with localized spots of apparent infection. Even after the general symptoms have abated suddenly there will light up a suppurative inflammatory process. The glandular involvement in the case following the grippe seems to be much more marked than in the ordinary suppurating tonsil.

Now, as to the mucous membranes themselves, the phenomena are irregular and in many cases curious. A mild attack may leave the mucous membrane irritated, aggravated and thickened, and this thickening and aggravation continues apparently unrelieved by local treatment. Again, frequently during the attack the pain and discomfort of the patient is all out of proportion to the naked-eye appearance of the membrane. I have seen a number of cases which were to me very curious. I have never observed it associated with any other condition. It is this: That while the membrane of the pharynx, naso-pharynx and nares is extremely sensitive, dry, painful and uncomfortable, there is very little swelling and in the course of a few hours blood clots will form on the surface of the membrane, and yet there is no distinct hemorrhage. This can be removed and no bleeding will occur and in the course of two or three hours the clot will re-form. It seems to be a capillary oozing on the surface of the mucous membrane. I have observed this phenomenon in the nose, naso-pharynx and in the pharynx. The common site is in the pharynx and naso-pharynx. Whenever blood shows in the expectoration it is always alarming to the patient. This apprehension, combined with the depression which is associated with and follows the grippe, has anything but a pleasing effect on the patient. It is especially alarming when the laryngeal structures are involved and this bloody exudate takes place within the larynx; the patient is then positive that it comes from his lungs. A laryngeal examination will clear up the diagnosis.

Quite often we find, after an attack of influenza, although the patient made a good recovery, that he complains of a thickening of his mucous membrane. His own impression is that it "feels

thick," and on examination that is exactly what you find. It is not an edematous swelling, but it seems tough and infiltrated and lacks the lustre and life of a normal mucous membrane. From examination of microscopic sections of this tissue, I believe that during the inflammatory attack there exudes into the perivascular tissue a peculiar albuminous material not unlike that which occurs in amyloid disease and that this material is manufactured in the blood, owing to some chemical change brought about by the toxins of the bacteria, and that this material is deposited in the tissue as an infiltrate. Treatment would bear out this fact, as in the majority of cases alternatives are productive of the best results.

A curious fact about local treatment is that such solutions as nitrate of silver, iodine, chloride of zinc, sulphocarbolate of zinc, etc., aggravate and make worse the inflamed area, while sedative oily solutions seem to relieve, yet where there are local spots of ulceration it is absolutely necessary to use a germicidal solution. I prefer to use Loeffler's solution. I believe, in the cases where there is ulceration, that owing to the absorption of the toxins or virus from the nidus of infection is due largely to systemic phenomena of a marked depression and the cardiac and renal lesions. The systemic after-effects of the grippe are very much like the systemic after-effects of diphtheria and scarlet fever.

As we know, frequently grave lesions follow an attack of the grippe or some latent lesion has been aggravated by the attack. This I believe to be explained on the same basis as diphtheria, scarlet fever and the other infectious diseases; it is the systemic effect of absorbed toxins. Should, however, there be no pre-existing lesion of the mucous membrane, local or of any internal organ this after-effect is not likely to be so serious.

As to the effect on tissue and function: The mucous membrane consists of a basement of membrane, upon which are epithelial cells, and under which are blood vessels, glands and nerves, the essential function of which is to secrete mucus. Any inflammatory lesion first alters the submucosa, which alteration depends upon the variety and severity of the inflammation. As to what part in the production of the disease bacteria take, I will not attempt to discuss, as from my own experiments I find no germ which is constantly present. In those cases *without* pre-existing lesions, the transudate from the vessel is undoubtedly more than a mere inflammatory exudate. I believe that there is a marked alteration in the liquid constituents of the blood, and that the exudate from the vessels is highly coagulable, albuminoid material, which infiltrates the tissue; this infiltration being more solid than fluid, by its pressure obstructs secretion, causing interference in function, as well as nutrition of the parts.

In those cases in which there were *pre-existing* lesions, I believe the exudate to be of the same character, but its effect on tissue and function I believe to be inconstant, being controlled largely by the pre-existing pathological alteration.

ABSCESS OF THE SPHENOIDAL SINUS OCCURRING WITH ACUTE MASTOIDITIS.

BY OSCAR DODD, M.D., CHICAGO.

Surgeon Illinois Charitable Eye and Ear Infirmary; Oculist and Aurist at the Augustana and St. Joseph's Hospitals, Chicago.

Abscess of the sphenoidal sinus is of such rare occurrence, and the symptoms so ill-defined that I thought the following case would be of interest. Its occurrence with another trouble also obscured the symptoms present.

The patient, a man twenty-nine years of age, called at my office April 15th, being referred to me from the hospital for ear treatment. He was suffering severe pain and was very irritable. I tried to get a history of his case but found his answers very unsatisfactory. As far as he gave it the facts were as follows: His general health had been good except for a catarrhal trouble. He had treated for this at intervals for a year and a half, with no benefit except the temporary relief. About ten days ago he had severe pain in the right ear, lasting two days and ceasing after a discharge of pus from the ear accompanied by a considerable hemorrhage. Following this there was slight discharge from the ear and little pain until last evening, when it was so severe "it nearly drove him crazy." By applying heat he was able to obtain some relief.

Upon examination I found the nose filled with muco-purulent secretion. The turbinates were not very much swollen and the discharge seemed to come from some of the accessory cavities. Upon trying to examine further he objected and said he was unable to stand more, as he felt so badly. The right ear was discharging some pus through a small opening in the membrana tympani. There was no swelling over the mastoid, and no tenderness or pain on pressure. He complained of severe pain in the ear and back of the head.

I sent him to the hospital, where he was put to bed and cold applications over mastoid and irrigation of the ear were used. His temperature was 100.2° , rising to 101.3° later in the evening. He had a bad night, the pain being most severe over the right eye. His temperature ranged from 101.8° to 103° the following day and the pain did not cease, only varying in its location from the ear to the frontal region. As it continued the next day, April 17th, with the temperature about 103° , I advised opening the mastoid, to which he

consented. The pain was still referred mostly to the frontal region, with tenderness over the supraorbital nerve. There was a little edema over the mastoid and tenderness on deep pressure over its tip.

On the 18th I operated on the mastoid. I found the bone very dense and the cells were all healthy until I reached the tip, where a pus cavity about a quarter of an inch in diameter was found. I did not open the antrum as there seemed to be no connection between the pus cavity and the ear, which was discharging freely. On the next day he felt easier but still had pain above the right eye and tenderness over the right supraorbital nerve. The temperature was 99° to 99.3° . Following this for five days he was quite comfortable, only complaining of pain at intervals in the right frontal region, and that usually at night. His temperature reached 100° only once or twice, being most of the time from 98° to 99° . The discharge of pus from the ear was growing less and the wound was in good condition. On the night of the 24th he was awake most of the time, complaining of severe pain. His temperature was about normal all the following day (he was taking a little antipyrine and quinine). He was sitting up in bed when I called in the afternoon, saying he did not like to lie down, as it made the pain in his head worse. The wound was in good condition. I examined his eyes and found no trouble with the optic nerves or ocular muscles. On the 26th he was very restless and complained of pain in the frontal region and in the lower jaw where the inferior maxillary branch of the fifth nerve emerges. His temperature ranged from 99° in the morning to $102\frac{1}{2}^{\circ}$ at 4 p. m. The wound was clean and there was no discharge from the ear. I left him at 5 p. m. and no signs of cranial trouble had developed, but a little later he was taken with vomiting and then a deviation of the right eye and inequality of the pupils was noticed. His temperature increased and he was delirious all night. He was alternately hot and cold, his temperature being 104° the following morning and at 4 p. m., April 27th, reached 105° .

Having learned from his brother that he had been under the care of a competent rhinologist of this city he was called to see him with me. He advised opening up the wound so as to see if the pus had penetrated above the ear to the cranial cavity. We opened it and found the bone healthy and no pus in the middle ear or antrum. As there had been no focal symptoms at any time there was nothing to point to an abscess of the brain. The optic nerves were some congested with engorgement of the veins, but no swelling of the

nature of a choked disc. The doctor said he had never seen any sign of trouble with the sphenoidal sinus, although he had treated him at intervals for over a year for the nasal trouble.

The patient's condition continued about the same for three days and then his temperature abated and he became conscious, recognizing people and inquiring about his condition. This improvement was followed the next day, however, by an increase of temperature, delirium and death.

The post-mortem examination, made by Dr. E. H. Ochsner, showed no trouble in the region of the temporal bone. At the base of the brain, apparently centered about the sphenoid bone, was a localized purulent meningitis with abundance of pus. The body of the sphenoid bone was so fragile that it broke very easily, showing a large cavity filled with pus. The walls had become thinned by osteo-porosis so there was very little to prevent discharge of pus into the cranial cavity. Whether there was any opening between, large enough to be demonstrated, could not be told as the bone broke like an egg-shell into fragments. The openings into the nose could not be seen.

The case was one undoubtedly of abscess of the sphenoidal sinus of long standing, as I learned later that he had severe attacks of pain before, very much like the one he had before coming to my office. After a treatment of his nose it would subside and not give him trouble for some time.

The otitis media with the mastoid trouble following were very likely an infection from the pus cavity.

As to the symptoms present, the only one which could be said to point to sphenoidal trouble was the severe neuralgic pain referred to the endings of the fifth nerve. This was fairly constant and at times very severe. At the beginning he referred the pain mostly to the occiput and ear, but later it was principally supra-orbital. No eye symptoms were present until the meningitis occurred.

The symptoms described by the different authors as being present in inflammation of the sphenoidal cavity are very varied. Schaeffer¹, of Bremen, has reported a large number of these cases and gives the symptoms of the chronic cases as follows: Fetor, dizziness, supra-orbital neuralgia, stiff neck or general pressure of the head or occiput. This pain is intermittent and may produce nausea and vomiting. He never found eye trouble. This is decidedly different from the case reported by Hardie², where the eye symptoms were the most pronounced and the first to call attention to the trouble. There was complete blindness and protrusion of one eye-

ball. Knapp³ also reports two cases in which the eye symptoms were present. J. H. Bryan⁴ describes a case of chronic suppuration of the frontal, ethmoidal and sphenoidal sinuses in a woman, aged forty years. A radical operation was done on the frontal and anterior ethmoidal cells. Owing to absence of symptoms, sphenoidal trouble was not suspected, but twenty-four hours after the operation acute leptomeningitis developed, with death two days later. Autopsy showed empyema of the posterior ethmoidal cells and the sphenoidal cavity with caries of the cribiform plate.

That a large number of these cases are not diagnosed and are treated for a simple catarrhal trouble is very probable. No symptom is present constantly except the discharge of pus, the origin of which is difficult to determine if the turbinates are normal in size or hypertrophied. Other symptoms may be present according to the conditions, as affections of the optic nerves, which are in close proximity to it, or purulent infection of the orbit with protrusion of the eyeball. When drainage is blocked the severe symptoms develop rapidly and death results from meningitis.

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² Hardie—*Transactions Illinois State Medical Society*, 1894, p. 409.

³ Knapp—*Journal American Medical Association*, 1893.

⁴ Bryan—*New York Medical Journal*, January 20, 1900.

SENSORY NEUROSIS OF THE NOSE.*

BY H. L. MYERS, M.D., NORFOLK, VA.

MR. PRESIDENT AND GENTLEMEN: I beg your indulgence for a short time in bringing before you a case of sensory neurosis of the the nose, which, in my experience, presents several unusual features.

It has puzzled me not a little as to its proper diagnosis, and it is with the hope of receiving some assistance from this body that I have asked permission to report the case.

Miss R., æt. twenty-three years, white, consulted me for the first time April 30th for treatment of an acute suppuration of the right middle ear, following an attack of la grippe, which confined her to her bed for ten days. The drum membrane ruptured on the second day, with the usual relief of pain. The discharge continuing rather longer than she expected, she consulted me. Examination revealed a small rupture in posterior fold of membrane; a purulent discharge, not profuse; deafness marked, patient being unable to hear the watch on pressure; distressing tinnitus. She noticed, after the discharge began, that there was decided numbness of the right side of the face. It was almost insensible to a pin prick. There was no paresis of muscles. The numbness existed only in a mild degree when she came to me.

In addition to this ear trouble, which healed kindly under treatment, she complained of impairment of the sense of smell and taste, which she had noticed before the ear trouble began, but during the attack of la grippe. This persisted after the nasal symptoms, which usually accompany influenza, had subsided. I found that she could detect no odor and was scarcely conscious of the odor of ammonia. There was really no trouble with taste, as she readily distinguished between sweet, bitter, sour and salt. A slight thickening over the middle turbinates was reduced by chromic acid, thus freeing the upper air passages from obstruction. Faradic electricity was applied directly to the region of distribution of the olfactory nerves. This was afterwards replaced by the galvanic current applied in the same way. One-thirtieth grain doses of strychnine sulphate were administered t. i. d. for thirty days. At

* Read before the Southern Section, American Laryngological, Rhinological and Otollogical Society, at Richmond, Va., December, 1900.

the end of this period the patient had made only sufficient progress to be enabled to occasionally detect an odor, as, for instance, a strawberry. She could taste the first berry but no more. She could also by this time detect that many things had an odor, but they all smelled more or less alike. As she expressed it, "they smelled musty."

She received no further treatment after this for several months, as she was absent from the city on a summer outing.

On her return, examination revealed quite an improvement, as she could oftimes get faintly the correct odor of an article and could occasionally taste something. One morning, in an abstracted way, she drew a spray of heliotrope blossom across her nostrils and was surprised that she detected perfectly this odor. On repeating the attempt she failed to smell the flower. In fact, she says whenever she has been able to smell an article it has been presented to her unexpectedly. The electrical treatment was resumed, and whether from this or natural causes, she has improved to the extent of being able to detect some odor to everything that has one; can detect escaping gas instantly and can distinguish between flavors of food, though they don't taste as they should. She can also detect at any time the odor of a carnation. Now, this patient started with anosmia of a seemingly typical type; her condition now resembles more parsomia. She is otherwise strong and healthy and free from everything like hysteria. She has not recently made any progress toward recovery, and I would be grateful for expressions of opinion as to the form of trouble, its probable cause and prognosis and any suggestions as to treatment.

151 Granby Street.

CORNU CUTANEUM AURIS.*

BY JOHN C. LESTER, M.D., BROOKLYN, N. Y.

As horny excrescences are among the rarest anomalies of the skin—Hebra being able to report only three of these cases—the report of a remarkable growth of this nature attached to the middle and outer portion of the pinna cannot fail to be of interest.

A careful review of dermatological literature has failed to disclose any reference to tumors of this nature having their attachment to any portion of the external ear. Their usual site is the nose or its immediate neighborhood.

Prof. W. H. Pancost¹ has reported a remarkable case of multiple horny growths of this kind attached to the nose. Pierce Gould² has also reported the history of excrescences of lesser magnitude and multiple, attached to the penis.

While it is a fact that these growths may appear anywhere on the body, they are rarely found except on the face and on the penis.

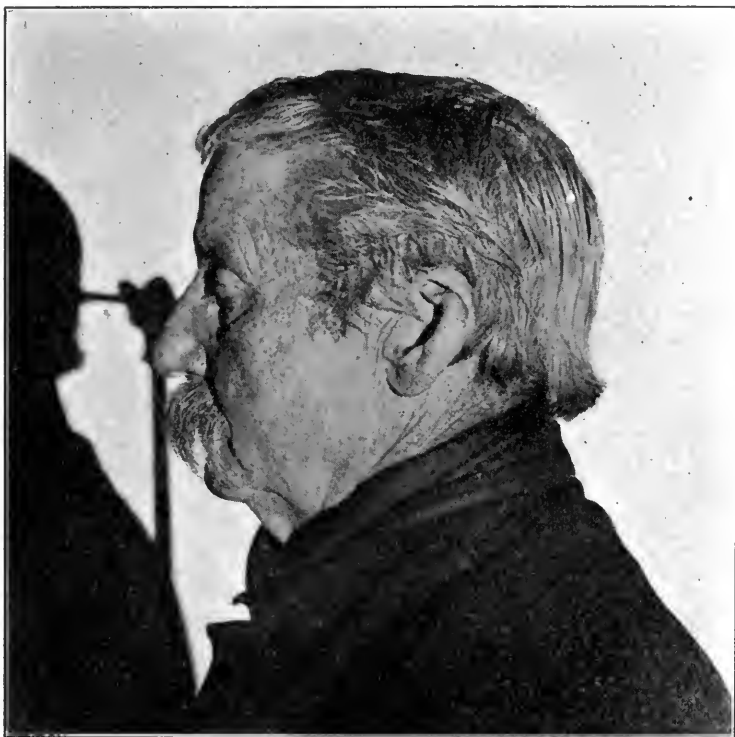
In the various works on the ear in which other neoplasms are referred to as occurring with more or less frequency, including cystomata, fibromata, epitheliomata, keloids, etc., no reference has been made to this form of outgrowth. According to our best authorities horny growths may assume any shape. They may be straight or curved, but are apt to be twisted in various directions. The external surface is usually hard, wrinkled and fissured. At their attachment at the base they assume more the consistence and appearance of the tissues to which they are attached, in contradistinction to the horny growths normally belonging to the animal creation. This assumption of the soft consistency of the tissues to which these growths are attached is gradual and not abrupt. This was particularly so in the case to be reported. In this case also the horny growth was single and not multiple.

Boettge's cases had multiple horns on the face—the man six and the girl, besides the facial growths, had several on the lower portion of the body.

Age seems to play an important role in the etiology of these cases, as they are more frequently found among those advanced in years, and in cases so far reported, a far greater proportion of males seem to be thus afflicted.

* Read before the sixth annual meeting of the American Laryngological, Rhinological and Otological Society. Philadelphia, June, 1900.

On January 12, 1900, Richard K., aged fifty-eight, by occupation a plumber, presented himself at St. Bartholomew's Clinic for treatment and gave the following history: About six months ago noticed a small pimple on the external border of the left ear, which had grown steadily since that time; has had severe headaches; ear was never injured; no history of constitutional taint of any kind;



Patient after operation.

has never had any warty growths on other portions of the body; has always been temperate and enjoyed good health with the exception of a chronic bronchitis; has had chronic middle-ear sup-puration of both ears, and hearing power was found to be much reduced; both ears were severely frozen during service in the army; no hereditary history.

Examination of the left ear revealed the following condition:

Attached to the upper half of the left ear was a horny excrescence measuring in length a little over one and one-fourth inches and in width, at its base, one inch. The attachment includes at its base, as will be seen by the plaster cast, the helix, fossa of the helix and antihelix. In shape it resembled a pyramid, slightly



Plaster cast, showing portion of growth.

twisted upon itself, with the apex turned towards the head. The distal end was found to be peculiarly square and blunt. This was due to the fact that a portion had been cut off by the patient with a pair of ordinary shears just five weeks prior to examination. According to the patient's testimony, since he excised the tip, the growth had rapidly increased in size. A second attempt was

made to excise another portion, but unsuccessfully, owing, as stated, to the hardness of the tumor. The growth at and near its base was soft and spongy, and its fleshy characteristics extended to about one-fourth inch from point of attachment.

Almost the entire cartilaginous portion of the ear, on further examination, was found to be practically ossified, being very rigid and having a bony feel, no amount of force used causing the slightest change in the conformation of this structure. The ear was loosely attached to the head and was otherwise normal.

Immediate removal was advised, and was accomplished in an unexpected manner. The growth came away *en masse* with the hardened matrix of the plaster cast, and this will explain the fact that no photograph was obtained of the growth *in situ*. Hemorrhage was severe, necessitating the use of ligatures, and the immediate closure of the irregularly depressed wound by several sutures. The wound healed by granulation after a period of two weeks. The point of attachment was cauterized a few times by c. p. nitric acid, and the subsequent history of the case was uneventful. As will be seen by the photograph which accompanies this article, the patient has now entirely recovered, there being no trace of the growth at the point of attachment, and no apparent tendency to redevelopment of a similar structure on the auricle.

The points of interest in this case are:

The uncommon location of the growth.

The history of the case—having had chronic middle-ear suppuration of the affected ear, and also history of severe freezing of the auricle.

The rapidity of growth after excision of tip.

The age and sex of the patient.

The accidental removal *en masse*.

The severe hemorrhage following removal, necessitating ligation of the larger blood vessels.

The ossification of the auricular cartilage, and

The complete and apparently permanent recovery.

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¹ Shoemaker: Diseases of the Skin, page 349.

² Report on Horny Growths of the Penis, *Medical and Surgical Reporter*, March 10, 1887.

THERAPEUTICS OF IODOFORM EMULSION.

BY PROF. VICTOR URBANTSCHITSCH, VIENNA.

(Translated by M. A. Goldstein, M.D., St. Louis.)

Mosetig's iodoform emulsion (iodoform 10.0, glycerini 65.0, aquæ destillatæ 25.0, gummi tragacanthæ 1.0, to be shaken before using) possesses a greater specific weight than does pus, and therefore has the tendency to displace the latter in deep sinuses. I have become convinced from experiments in many cases, that by repeatedly (oftentimes daily) using iodoform emulsion in deep sinuses and abscesses a cure may result. In narrow sinuses it is necessary to apply the emulsion drop by drop in order to displace the pus, until the opening is filled with the emulsion. The iodoform in the emulsion settles at the bottom and on the walls of the wound, so that the deepest parts of the wound especially are subjected to the greatest action of the iodoform.

The following cases may serve as examples of the important therapeutic value of iodoform emulsion:

Case I.—A tuberculous girl, in the course of a severe suppurative otitis media, developed on the posterior wall of the pharynx a gradually increasing swelling, resulting in severe dysphagia. Inspection revealed a swelling at the site of the right pharyngeal orifice of the Eustachian tube, projecting backwards to the posterior wall of the naso-pharynx and downwards to the oro-pharynx. Upon pressure over this area a large quantity of pus was expelled from the right ear, indicative of a burrowing abscess originating in the right ear. As the patient refused to have the abscess opened the following therapeutic measures were resorted to: By pressure I gradually forced the pus out through the external auditory canal, maintained the pressure on the pharyngeal end of the abscess, and directed the patient to incline the head well to the left side, and then filled the external auditory canal and tympanic cavity with the iodoform emulsion. By gradually releasing the pressure of the finger over the fundus of the abscess a sort of suction was produced and the emulsion rapidly penetrated from the middle ear into the abscess. By repeating this procedure the largest portion of the abscess cavity was found to have been penetrated by the emulsion. This emulsion was pressed out of the ear on the following day and a fresh quantity substituted. After a few days a marked diminution in the size of the abscess cavity took place; two weeks later all traces of this burrowing abscess had disappeared. The cure was permanent.

Case II.—Child with carious sequellæ of suppurative otitis media. A fistulous tract, extending from the apex of the mastoid process six c.m. downward and forward to the area of the carotid artery and jugular vein. The pulsation of the carotid artery could be readily felt on introduction of a probe to the fundus of this fistulous canal. After daily application of the emulsion, used drop by drop, for one week, the length of the fistulous tract had increased one c.m. as indicated by the measurement with the probe. In a few weeks the passage had entirely closed. The result was permanent.

Case III.—Female, age twenty-four, acute suppurative otitis media, with development of abscess over apex of mastoid process. By pressure of this area, pus was observed to exude from the region of the antrum into the tympanic cavity, indicating a perforation through the cortex of the mastoid process and effusion of pus over the surface thereof. As the patient refused to have the abscess treated surgically, I resorted to the use of iodoform emulsion.

By continued pressure over the mastoid process an evacuation of the pus through the tympanic cavity and external auditory canal was obtained, and the ear thoroughly dried. The head of the patient was placed in a lateral dependent position and after filling the auditory canal with emulsion, the pressure over the mastoid area was gradually released in order to allow the emulsion to penetrate into the mastoid cells and thus reach the floor of the abscess cavity. The head was allowed to remain for five minutes in this dependent position to favor penetration into the mastoid area. One week's course of this treatment applied daily resulted in recovery.

Case IV.—In a young woman, twenty years of age, on whom I had performed the radical operation on the right ear, I found an extradural abscess. A free opening of this sinus revealed pus burrowed as far as the base of the cranium. By applying the iodoform-vasogen twice daily (drop by drop) for fourteen days, I succeeded each time in expelling the pus from the cavity. During this time the patient had chills and a variation of temperature, ranging from 36.2°C. to 41°C., also had attacks of vomiting, vertigo and *dimness of vision*. Ophthalmoscopic examination excluded neuritis. After three weeks' treatments a gradual diminution of all symptoms took place. Examination two years later showed a complete epidermization.

Case V.—Elderly man, still under treatment after radical operation. In this case I evacuated an enormously large extradural abscess by instillation of iodoform emulsion or iodoform-vasogen daily for several weeks. The profuse suppuration of long duration was completely checked by this procedure and the abscess cavity is closed at the present writing.

In none of the cases which I have thus far treated with iodoform emulsion have I noticed the slightest symptoms of iodoform intoxication. We should be on our guard against this condition, especially where large quantities of the iodoform emulsion are used.

ACCIDENTS ATTENDING ADENOID OPERATIONS.

BY CHRISTIAN R. HOLMES, M.D., AND H. STOWE GARLICK, M.D.,
CINCINNATI, O.

The breaking of an instrument at any time during an operation is unpleasant, but when the sharp portion of a Gottstein curette, large or small, breaks off in the vault of the pharynx of an unconscious or struggling child, with most excellent chances for the broken piece to either pass into the larynx or stomach, the case assumes an unpleasant aspect.



Fig. 1. Broken curette.

Case I.—Dr. Holmes' patient.

Elizabeth S., age eight. Chloroform anesthesia. I always operate for adenoids with the patient lying upon the left side, the whole body being upon an incline with the head lowest, so as to prevent the blood from being swallowed, or entering the larynx. This position always enables the operator to watch the quantity of blood lost, and avoids the accidental swallowing of the growths, or their entrance into the larynx. The illumination is from an

electric forehead mirror, the operator being seated upon a low stool on the right side of the operating table or chair.

I had no sooner placed the instrument in the vault, and was making pressure, ready to begin the first stroke, when a distinct loud crack was heard. I instantly withdrew the instrument, and saw at a glance that the blade or sharpened portion was missing. (See Fig. 1.) I promptly inserted the index finger of my left hand behind the soft palate, encountering the broken piece half way down the posterior wall of the naso-pharynx. Pushing it up against the vault of the pharynx, I had the body of the patient almost inverted over the edge of the table to guard against the swallowing of the piece.

But how to extract the broken fragment became a serious question. Never having encountered a situation like this before, I had not brought a pair of rectangular forceps with which the blade

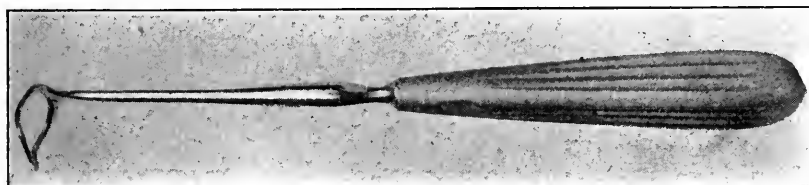


Figure 2.

could readily have been extracted, and the pharynx being small, I was unable to introduce more than one finger, and hence could not grasp the broken blade, nor had I any forceps small enough with which to reach it through the nares, so for the time being I simply waited and hoped, trying to prevent the muscles of deglutition, which were now beginning to become active, from grasping the foreign body and helping it on its way to the larynx or stomach.

I discovered that one end of the blade terminated in a sharp, hook-like process, and succeeded in pressing this into the flesh of my index finger, and by a quick movement dragged it over the soft palate, when it was readily removed from the mouth with forceps.

In some instruments the cause of breaking is probably due in a measure to imperfect tempering of the steel, but the chief cause is that in forging the curettes there is too sharp a shoulder made where the blade begins at A. (Fig. 1.) In others the blades are

made thinner than need be in the first place, and repeated sharpenings often bring them down to much below the point of safety. To overcome these defects I have caused a pattern to be made by Meyrowitz, of 104 East Twenty-third street, New York City, which meets these objections, the handle also being of such proportion as to give the operator firm control over his instrument. (Fig. 2.)

Case II.—Dr. Garlick's patient.

F. R., age five. Diagnosis: Adenoids of naso-pharynx, with the usual symptoms. On September 21, 1899, in the throat clinic of the Ohio Medical College, I attempted to remove the growth with a Gottstein curette. The operation was to be made in a sitting posture and without an anesthetic, as it is difficult in the clinic to use general anesthesia, and very satisfactory results are obtained

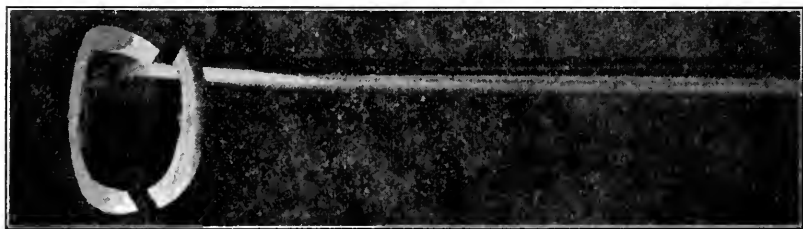


Figure 3.

by this method, although I prefer general anesthesia, where feasible.

Making the usual pressure on the curette, I felt something break. Quickly withdrawing the instrument, I saw at a glance the blade was broken, and rapid as were my efforts, I could not prevent the swallowing of this piece. Gave the mother of the child directions as to treatment of a sharp foreign body in the alimentary tract, but at no time was there any discomfort on the part of the child, and on Sunday, 24th, the patient passed the sharp piece of my instrument. (Fig. 3.) Size one-half inch long and one-sixteenth inch wide, sharp throughout its length, and at both ends.

On the 26th, with a much heavier instrument, I successfully removed the adenoid growth. This accident is a dangerous one, and may not always have so favorable a termination.

FOREIGN BODY (TOOTH) IN LARYNX OF A MAN FIFTY-ONE YEARS OLD.*

BY GOTTLIEB KIAER, M.D., COPENHAGEN.

The patient was treated in the hospital for laryngeal and pulmonary tuberculosis. The post-mortem showed large tubercular ulcerations in the larynx, occupying almost the whole right side of the larynx; similar ulceration, but much smaller, was found on the left side, and on the epiglottis were scattered smaller ulcerations. In the distended ventricle of Morgani was discovered a tooth with its crown forward and its root pointing backward. When the larynx closed the tooth was partly covered with the granulations, but in the median line could clearly be seen a dark speck corresponding with the position of the tooth. From literature one gets no information concerning teeth in the larynx. The latter probably fell in the larynx during extraction occasioning suffocation spasms which forced it into the ventricle of Morgani, where it has made for itself a nest. Foreign bodies in the larynx are no curiosity, and there are many instances of their remaining there for years without giving trouble. Such was the case reported by Garick of a needle being lodged transversely in the glottis.—*Monatschr. f. Ohrenheilk.*, p. 22, 1892.

In Desault's case a cherry stone lodged for two years in the ventricle of Morgani.—*Gottstein, Krankh. des Kehlkopfes*, p. 202.

Köhler refers to a case of a one-mark piece (size of a United States "quarter") wedged under the right vocal cord, and the author saw a case where a nutshell was held under the glottis for fifteen months, wrapped in granulation.

*Original Specimen in Section Room of the Commune Hospital.

TUBERCULAR LARYNGITIS IN CHILD OF THREE YEARS.

BY GOTTLIEB KIAER, M.D., COPENHAGEN.

Greda P. was an inmate of Queen Louisa's Hospital for Children from December 28, 1900, to February 5, 1901. Parents healthy. Father, brothers and sisters died of phthisis. She is the third of five, one of which died at three and one-half years from tuberculosis. During the last year she has been suffering from hoarseness and coughing, the latter of the croupy character at night; no vomiting succeeding, and no suffocation. During her sojourn in the hospital respiration was accelerated, with inspiratory in-drawings of the jugulum to an insignificant degree—expiration obstructed and prolonged. Stethoscopic examination negative at first, but later showed an emphysematous condition, especially in the upper lobe of the left lung. A protuberance bacilli revealed in the septum. Urine contained albumen.

December 31st.—The laryngoscope revealed much swelling of the epiglottis, and the ligamenta, ary-epiglottica, so much so that the lumen of the larynx appeared reduced to a three mm. cross diameter. The mucous membrane was much swollen, red and presented the appearance of having kernels in its surface. Vocal cords not visible, and there was no ulceration. The patient died six months after this examination. Post-mortem showed the epiglottis very much swollen and stiff. The mucous membrane on the posterior part of the epiglottis was covered with kerneller excrescences with here and there an atrophied overlapping ulceration, giving a gnawed-off appearance to the upper portion of the epiglottis. These changes in the mucous membrane extended over the whole inner part of the larynx, so that the separate anatomical parts could not be made out; the vocal cords, the ventricular cords, were completely destroyed, leaving only a slight indication of the entrance to the ventricle of Morganza. In the upper part of the trachea were two hemp-seed sized superficial ulcerations. Large swollen glands were discovered next to the trachea, and along the left bronchus. The upper lobe of the left lung revealed cavities filled with pus, the largest the size of a hazel nut. Both lungs showed the tubercular process in other parts. Tubercular disease was also discovered in the upper part of the ilium, the cecum and in the left kidney.

A FEW CASES OF SUPPURATIVE MIDDLE EAR DISEASE, THE COMPLICATIONS AND OPERATIONS.*

BY ALBERT B. MCKEE, M.D., SAN FRANCISCO.

In speaking of middle ear and mastoid disease, the line between the acute and chronic cases is often not sufficiently distinctly drawn. The two classes of cases are quite different in their nature, although acute symptoms may, at any time, be manifested by a chronic case. In the one case, we have acute and unmistakable manifestations and the necessity for operation is well marked; in the other, the danger, if any, is more remote and the individual often enjoying good health. In such cases there is likely to be diversity of opinion in regard to the necessity of an operation and the responsibility of urging it upon the patient is much greater. Again, the operative methods are quite different, and a much greater knowledge and skill are required in the operation for chronic suppuration than in case of a mastoid abscess. In the latter case, nature often shows the way unmistakeably, and an operator of mediocre ability may succeed in obtaining a brilliant result, whilst the operation in chronic cases depends upon the unaided skill of the surgeon.

Another point which ought to be emphasized is that the symptoms in the one are urgent and the relief immediate, in the other, the patients may not be aware of the advisability of operation and the cure may be slow and, in the eyes of the laity, incomplete.

In the following paper cases tending to illustrate both varieties and the varying difficulties are tabulated as nearly as possible under proper headings. This paper is not intended as an exhaustive description of the various mastoid operations but only for the purpose of giving the author's individual experience, in the hope that the discussion aroused may add something to our knowledge of the subject.

Case I.—Acute mastoiditis after swimming:

C. H., aged forty, came to me on March 30, 1896, complaining of pain behind the ear and in the top of the head. He said that the pain made its appearance after swimming and diving and that, in childhood, he had suffered a rupture of the drum of the ear from a similar cause. The examination showed much tenderness to

* Read before the San Francisco Society of Eye, Ear, Nose and Throat Surgeons, March 21, 1901.

pressure behind the ear and over the tip of the mastoid process. There was a small amount of purulent discharge in the ear, and the drum membrane was bulging in its posterior segment. Pulsation in the region of the anterior half of the membrane made it probable that a perforation was present, but the prolapse of the posterior-upper wall rendered it impossible to see the perforation. The watch was not heard on contact with the ear. Temperature about $99\frac{2}{5}^{\circ}$. The tenderness soon disappeared under treatment and the pain was so much diminished that the patient went to work, however he was not quite restored to the normal condition; and, one month later, after some pain in the ear, discharge of pus followed. The mastoid again became tender and there was a neuralgia-like pain in the side of the head. The symptoms again became less under treatment with ice and leeches but tenderness persisted. The patient's temperature rose at times to $99\frac{4}{5}^{\circ}$. At times the ear felt almost normal, again the pain and tenderness reappeared. The sensitiveness became localized in the region of the mastoid foramen and a very slight edema made its appearance. Five or six weeks after his first visit, during which time the symptoms had varied so much that there was some doubt as to the necessity for operation, the mastoid operation was done. Upon incising the periosteum, pus was evacuated. The point of exit was not discovered unless it made its escape through the mastoid foramen. The cortex of the mastoid was very hard. The mastoid cells were opened and a small quantity of pus evacuated. The recovery was uneventful except that neuralgia persisted for some time after, a sequel which has often been noticed after mastoid operations.

Case II.—Acute mastoiditis, sinus thrombosis, pyemia. Recovery.

On August 22, 1906, I was called to see L. M., who complained of severe pain in the ear, which he ascribed to swimming. The pain first made its appearance six days previously, but diminished somewhat, again becoming severe two days prior to my visit. There was also prolapse of the posterior wall. Temperature $101\frac{2}{5}^{\circ}$, and the tongue was heavily coated. On the following morning there was a profuse discharge of pus from the ear. The pain and temperature diminished somewhat, but the temperature rose again. On the afternoon of the 25th the patient's temperature rose to 103° . He was restless and slightly drowsy, but there was no swelling over the mastoid. On the following day the mastoid was opened. The patient's condition was improved after the operation, but the improvement was only temporary. The tem-

perature reached $104\frac{1}{2}^{\circ}$. The patient complained of abdominal distress, and the rise of temperature and irregularity of the bowels were ascribed to the same cause.

On the 29th there was vomiting and diarrhœa, following which the boy claimed some relief. On the following day there was tenderness in the region of the right biceps and, a day later, there was some complaint of pain in the popliteal region. There was a faint redness over the right upper arm. Suppuration from the mastoid wound was profuse. In consultation it was decided that the pyemic symptoms were due to absorption from the mastoid. A second operation was made and the entire cortex of the mastoid was removed. The mastoid antrum was opened more freely and the communication with the middle ear enlarged. The temperature again fell gradually and the patient complained only of soreness in the arm, and he felt so much better that he expressed a desire to read.

September 3d, morning temperature normal, but the evening temperature rose to $102\frac{1}{5}^{\circ}$. Patient had a profuse sweat. Following this he had a chill, vomiting and diarrhœa. The temperature continued to vary within great limits. On the 15th there was œdema and tenderness in the right arm and leg and the mastoid wound was filled by granulations. The patient was again etherized, the granulations curetted and a large amount of pus evacuated from the arm and leg. Further exploration of the mastoid and sinus was in view, but the condition of the patient rendered it necessary to postpone the work. Again there was a rise of temperature, diarrhœa and sweats, and an incision in the other leg evacuated an enormous amount of pus. About this time the temperature was subnormal at times.

October 10th, the temperature, which has not been above 100° for the past few days, rose suddenly to $102\frac{1}{2}^{\circ}$. The discharge from the arms and legs has nearly ceased. Diarrhœa, vomiting and rigors. The patient complained of severe nocturnal headaches. There was slight tenderness in the jugular region and an ill-defined cord. The skull was not sensitive to percussion. A few curd-like masses of pus, unlike anything seen heretofore were evacuated from the wound. The patient's condition began to improve soon after this, and notwithstanding occasional rises in temperature, there was gradual recovery. On November 5th the patient was sitting up and complained of diplopia. Eleven days later he was examined under favorable circumstances and several minute hemorrhages discovered in the retina. All of the symp-

toms gradually disappeared and the patient made a complete recovery. There can be little doubt now of the correctness of the diagnosis, and yet, at times, the indications did not appear as clear as would seem from their summing up. The patient was very unruly, disposed to exaggerate his symptoms or conceal them as his moods varied. The first examination of the eye was negative owing to the defective illumination and the restlessness of the patient. The symptoms of obstruction of the jugular vein were not well defined, and the patient was in the habit of acknowledging or concealing the sensitiveness of a part as best became his mood at the moment. The theory of absorption from the mastoid should not have mislead us, but in view of this and the formation of abscesses in the limbs the symptoms were readily accounted for.

Case III.—Acute mastoiditis, operation. Recovery:

N. S., aged sixteen years, has complained of a constant pain in the left ear for the past two weeks. The patient is very pale and emaciated and there is a family history of tuberculosis.

Examination shows the hearing to be very defective on that side, the posterior upper wall of the meatus prolapsed, a small amount of purulent discharge and slight œdema and tenderness of the mastoid region. The temperature was $99\frac{2}{5}^{\circ}$.

In addition to the ear trouble, there was a large adenoid and consolidation of the apex of the left lung.

Upon the following day the mastoid was opened. The periosteum was found much thickened and the cortex of the mastoid very soft and vascular so that it could be opened with a curette. About a drachm of pus was evacuated. Healing was complete in about three weeks and the patient was completely relieved from his ear trouble.

Case IV.—Acute mastoiditis, operation. Recovery.

For the past week has had pain in the ear. Examination shows the auricle projecting somewhat from its normal position and the mastoid region very sensitive to pressure. There was some prolapse of the posterior upper wall, but no discharge from the ear. A free opening into the mastoid antrum gave exit to a small amount of pus with complete relief. The wound was completely healed in about five weeks.

Case V.—Acute mastoiditis; Wilde's incision. Recovery.

Miss T——, aged eighteen, awoke one morning with pain in the ear. On the following day a profuse discharge of pus from the ear took place. About three weeks later the pain began again and was accompanied by mastoid tenderness and slight vertigo. Paracentesis gave exit to a small amount of pus and much relief

to the symptoms. Leeches and ice bags were used and the trouble relieved for a time, but the patient never regained her former condition. The trouble was never sufficiently urgent to render an operation necessary. On December 28th, about seven weeks after the onset of the trouble, there had been subnormal temperature on one or two occasions, with an occasional rise to 100° . Pressure on the mastoid produced a sensation as though fluid were escaping into the ear. There was slight mastoid tenderness, and an unpleasant feeling in the ear upon walking. The discharge from the ear had ceased some time before, and the drum membrane was almost normal in appearance. In consultation it was decided to make a Wilde's incision. This procedure was carried out, but, with no immediate effect on the symptoms. Under general hygienic measures the patient gradually and completely recovered.

The patient was found to have a very marked hysterical tendency, and this may aid in explaining the apparent lack of relation between the seemingly pronounced symptoms and the recovery after a Wilde's incision.

Case VI.—Catarrhal otitis, mastoiditis, extra-dural abscess; operation. Recovery.

Mrs. H., aged forty-four, had an attack of la grippe, accompanied by pain and fullness in the left ear. The watch was heard only on contract, the M. T. was hyperemic and the landmarks not visible. Treatment for several weeks by means of catheterization and the use of pilocarpine produced little improvement. About a month after the onset of the trouble there was a slight mastoid tenderness. The patient went to the country for a month, and returned with the symptoms practically unchanged. She noticed upon stooping a feeling as though something moved in the ear. Three weeks after her return from the country the mastoid tenderness again appeared and there seemed to be a slight projection of the auricle. Five days later the condition of the ear was as follows: Occasional, but very moderate pain, considerable swelling over the mastoid region, slight prolapse of the posterior upper wall, illy-defined sensation of deep-seated fluctuation, pressure upon the mastoid produces a feeling of fluid entering the ear, œdema in the parotid region, temperature for the past two evenings has reached 100° .

The mastoid was opened on the following day. Upon incising the periosteum there was an escape of pus. A fistula was discovered leading backward to the lateral sinus. The antrum was freely opened and a large piece of bone over the sinus removed, giving exit to considerable pus. The sinus was found to be intact. Healing was uninterrupted and the wound was closed in about five weeks.

Case VII.—Mastoiditis, operation. Recovery.

E. G., aged sixteen, had a discharge from the ear for four years. Two months prior to my visit he had pain in the mastoid region with considerable swelling and vertigo of so severe a character that he was unable to stand. The temperature reached 104° .

The symptoms passed off but, upon recurring, I was called in to operate. The operation presented no unusual features. The cortex of the mastoid was thin and the cells extensively diseased. The relief was complete and the convalescence normal.

Case VIII.—Chronic suppurative otitis, meningitis. Death.

C. H., aged twenty-eight, had been having pain and discharge from the right ear for two weeks, and the pain for the last four days had been intense. The patient admitted that he had had discharge from the ear prior to this attack, and the appearance of the ear would indicate that the trouble was one of very long standing. The examination showed a small amount of foul smelling discharge, a large cicatrix occupying the lower half of the membrane and a slightly projecting reddish area above. The region behind the ear was slightly sensitive to pressure. A free paracentesis resulted in much hemorrhage and much relief to the pain, but little pus was discovered. Within a few days the projection above became more marked and was seen to be a polypus protruding from a small opening in Shrapnell's membrane. A large piece was removed with the snare, and, on the following day an equally large mass was removed, the growth seemed to be forced forward as fast as a place was made for it. Three such pieces were removed, and after the last operation a considerable amount of pus escaped. The patient was free from pain for some time following this and able to be at his work for nearly two weeks, when he was again seized with pain in the ear. A free opening was made in the membrane and the patient again showed some improvement. He failed to report a few days later, and upon calling upon him it was found that he had suffered greatly during the night, but was much easier at the time of my visit.

The patient complained of pains in the back of the head and there was some sensitiveness to percussion. The odor of the discharge from the ear was very foul. The temperature was not taken at this time.

Three hours later I found the patient unconscious and his breathing stertorous. The fingers of the left hand were flexed. The temperature was $104\frac{3}{5}^{\circ}$ and the pulse 68. The patient was perspiring profusely and was said to have had a chill. Notwithstanding the desperate condition of the man, in consultation with the

family physician, it was decided to remove him to the hospital, as no facilities for operating could be had at the house, and to explore the mastoid and adjoining region. The mastoid was found filled with offensive granulation tissue and thoroughly curetted. The sinus was uncovered and found normal. An opening was made upward from the middle ear and the dura incised, however no pus was found and the dura was not noticeably affected at that point. No further exploration was attempted. The coma persisted, sweats, rigors, high temperature, twitching of the left leg and arm, optic neuritis, and death followed two days later.

Case IX.—H. B., aged about thirty-six, was seen by me June 5, 1899. On March 8th he began having pains in the left ear, and three days later there was a discharge of pus. Up till May 15th he got along well when he was seized with severe vomiting without nausea, lasting five days. There was also severe vertigo which persisted up the time of operation. The temperature is said to have reached 103° , and there was some blurring of vision. At the time of his visit to me there were the usual signs of mastoiditis. The simple operation was done and the patient made an uneventful recovery.

Case X.—Mastoiditis from suppurative otitis following scarlatina.

T. B., aged four years, was taken sick with scarlatina on November 25, 1900. One week later both ears began to discharge and continued to do so until December 3d when the boy complained of pain behind the ear. There was a slight œdema of the mastoid region and some protrusion of the auricle. The drum membrane showed a small perforation with prolapse of the upper wall. The symptoms declined somewhat under the treatment, but on the 10th there was a rise of temperature with increase of trouble. Examination of the pus by Prof. Ophuls showed a pure pneumococcus. The mastoid was opened on the following day and an uneventful recovery followed.

Case XI.—Chronic middle-ear suppuration, cholesteatoma of the mastoid, operation.

A. M., aged twenty years, had had a suppuration of the middle ear many years. At the time of my first examination I found a small slit-like perforation near the anterior wall. The discharge was very thin and exceedingly offensive. The perforation was enlarged but no cessation of the discharge followed. Later the malleus was removed and free access had to the tympanic cavity, but no improvement followed after many month's treatment. The patient suffered no inconvenience save that of having to cleanse the ear frequently. On June 19, 1900, the mastoid was opened by Dr. W. E.

Briggs, of Sacramento, with my assistance. Upon removing the cortex the whole mastoid was found to be one great cavity about the size of an almond, filled with a mass of cholesteatoma. This mass was removed, in doing which the sinus was uncovered, and the posterior wall of the meatus was taken away. Dr. Briggs did the operation for the purpose of demonstrating to me the method of Jansen, of Berlin, for closing the wound by a posterior flap and skin grafts, but it was considered better in view of the nature of the trouble to leave the wound open. At the present time there is a fistulous opening lined with epithelium behind the ear, but there is always a small amount of discharge in the ear. The middle ear and mastoid opening communicate freely and the ear can be packed from the posterior opening. The patient is at least safe in his present condition, but as the cholesteatoma continues to form it is doubtful if the cure will be complete.

Case XII.—Chronic suppuration of the middle ear. Operation.

Mrs. P., aged about forty-five, had had a discharge from the ear since childhood. She consulted various aurists, all of whom advised an operation.

The lower part of the membrana tympani was absent and there was a small amount of discharge present.

July 18, 1900, the mastoid was opened. The bone was found exceedingly hard and the mastoid process very small, in fact the dura was uncovered after a small amount of bone was removed and the middle lobe of the brain seemed to overlap the antrum. Finally the posterior wall was cautiously removed and with a small hook in the antrum the opening was enlarged. The ossicles were removed and the middle ear freed from diseased tissue. A flap was made of the posterior wall and the operative wound closed. The flap was held in place by packing, after several skin grafts were inserted. Owing to the incomplete success of the grafting the bone was slow in healing. Eventually the bone was completely covered by cicatricial tissue and the ear was completely dry. This new-formed tissue shows a tendency to the formation of small blebs as in an ordinary external otitis, but the cavity is freely accessible and no disease of middle ear present.

Dr. Briggs informs me that he has done this operation a number of times with good success, in one case at least the cure having been complete in five weeks. Jansen seems to have demonstrated the possibility of immediate application of the grafts without waiting for granulation.

533 Sutter street.

ANIMATE BODIES IN THE AUDITORY CANAL.*

BY J. M. INGERSOLL, A.M., M.D., CLEVELAND, OHIO.

Lecturer on Oto-Laryngology in the Medical Department, Western Reserve University.

Animate bodies in the auditory canal are rather unusual and are considered somewhat of a curiosity. If the insect is vigorous and active, its movements usually cause excruciating pain in the ear. If the ear is normal and the insect is small, the intruder may be held fast in the wax, and so cause no inconvenience; the patient may not even be aware of the presence of a foreign body in the ear. In such cases the foreign body usually acts as a nucleus around which the wax is deposited, and the insect is not discovered until the wax is removed, or the ear is examined for some other cause. Sometimes one of the hairs in the auditory canal, or a piece of hair from the head or beard, may be lodged in the canal in such a position as to give the sensation of something crawling or moving in the canal; especially when the patient is eating or talking, and such a condition may be easily overlooked, unless the ear is carefully examined with a good light. A very small insect may enter the canal and be hidden by a little wax, or by the curve in the canal, and so escape observation, but gentle syringing will remove it.

Foreign bodies, whether animate or inanimate, imbedded in cerumen, may remain in the auditory canal almost indefinitely without causing any trouble. The greatest danger is from unskillful attempts to remove the body. No one instrument is suitable for all cases, but the safest and most useful instrument in the great majority of cases, is the aural syringe.

The Year Book of Nose, Throat and Ear for 1901, mentions the three following cases of animate bodies in the auditory canal reported during the past year. Dr. C. H. Lovewell found a bee imbedded in a mass of cerumen. The patient said that while he was working on a farm in 1872, an insect flew into his ear. For three days the pain was very severe, and then subsided while he was asleep. He had suffered no discomfort since then and supposed that the insect had escaped.

Dr. B. F. Church removed a live tick from the canal. The patient gave a history of having had a clawing sensation in his ear for two years, and the accumulation of cerumen and epithelial scales

* Read before the North Central Ohio Medical Society, March 29, 1901.

external to the tick, led Dr. Church to think that the patient's statement was correct in regard to the time that the insect had been in the ear. Dr. A. J. Holmquist reported the removal of three maggots from the ear.

The three following cases occurred in my own practice:

Mrs. S. came to my clinic at the Lakeside Hospital, and said that during the previous night an insect had crawled into her right ear. She could feel something moving in the auditory canal, and at times suffered severe pain, accompanied by noises that were almost unbearable. An examination of the right ear showed a small black insect crawling around in the bony canal. The insect was easily removed by means of a syringe full of warm water, and was found to be a bedbug.

The second case was a young actress who came to see me in regard to a gradually increasing deafness in the right ear, secondary to scarlet fever. On each side just above the tragus, there was a congenital fistula auris; on the left side the fistula was about 1.5 c.m. deep; on the right side there were two shallower ones with a common opening.

These two fistulae contained a small amount of foul, sebaceous material. According to Virchow, such fistulae represent the incomplete closure of the upper bronchial clefts.

In the right auditory canal, a dark brown striated body could be seen. With a pair of small forceps I removed a cockroach. The roach's head was toward the drum membrane, showing that he had crawled into his living tomb, probably while the patient was asleep, for she had suffered no discomfort and was surprised and chagrined when I showed her the roach. There was no discharge in the auditory canal, so that the roach could not have been attracted by any abnormal condition there, but the exudate from the fistula was probably the thing which had attracted it to this region. After entering the auditory canal, it was held fast by the small amount of wax which was present, and died there.

It hardly seems possible that so large an insect could enter and remain in the canal without causing the patient some pain, but she had experienced none and had no idea how long the roach had been in her ear. The deafness was due to a lesion in the middle ear and was not affected in any way by the removal of the roach.

The third case was a laboring man who came to my clinic, suffering intense pain in his left ear. The auditory canal was filled with a squirming mass of small maggots, and several stray ones were wandering around over the auricle. The patient said that he had

had a purulent discharge from his left ear for years. Three days before he came to the clinic he had lain down on the grass and gone to sleep. The following day his ear pained him and bled a little. On the morning of the third day he discovered some maggots on his pillow, and with his finger removed quite a number from the auditory canal and the auricle. With a syringe and warm water I washed out 169 maggots. Then the ear was dried and four more were removed with a pair of small forceps, making 173 maggots altogether. The ear seemed to be clean then, and was dusted with nosophen powder. The patient was given a saturated solution of boric acid and absolute alcohol, with instructions to put five drops of the solution in his ear three times a day, and return for treatment of otitis, but he never came back, so that I presume the maggots were all removed. Evidently while the man was sleeping on the ground, a fly had been attracted by the odor of the pus and had deposited her eggs in the auditory canal. Most of the maggots were placed in a vial containing ninety per cent of alcohol, and at the end of three hours some of them were still alive and active. A few larvæ placed in a 1 : 1,000 bichloride solution were killed almost immediately, showing that if for any reason such larvæ could not be removed from the ear, a bichloride solution is much more efficient than alcohol in destroying them.

When one considers the extreme sensitiveness of the auditory canal and the drum membrane, the excruciating pain usually caused by an active insect in the canal is not surprising, and the noise made by the insect's movements, particularly when it touches the drum membrane, is terrible. In such cases if the insect cannot be removed immediately by syringing the ear, the auditory canal should be filled with a heavy oil, which will interfere with the insect's movements and effectually cut off its air supply. Olive oil and albolene are among the best oils for such a purpose, but if they cannot be obtained at once, machine oil or any of the heavy oils, or even melted butter, may be used. After the insect has been killed in this way, there is no longer any need of haste in its removal.

Children frequently put beans or peas or pebbles or some other small objects into their own or each other's ears, and the parents become alarmed, not on account of the pain which such things cause, but through fear that the hearing will be destroyed. Before making any attempt to remove such bodies, the ear should be carefully examined to determine whether or not a foreign body is in the auditory canal, and if one is present, to determine its nature and size, shape and position. By drawing the auricle gently backward and

upward, the auditory canal is straightened, and if the sunlight is allowed to fall directly into the ear, a very good view of the canal and even the drum membrane, can usually be obtained. If a foreign body is present, it can usually be seen in this way, without the use of a head mirror and aural speculum. Small bodies which do not fill the canal can be removed by gently syringing the ear. The auricle should be drawn backward and upward to straighten the canal and the stream directed between the wall of the canal and the foreign body, so that the return current will force the body out. When the foreign body nearly or completely fills the canal, syringing would tend to force it inward. If it presents a smooth surface, a piece of twine may be teased out, covered with glue, and placed against the body and held in position by a cotton packing until the glue sets; then removing the body, by pulling on the twine. Dr. C. Macaskie reports the removal in this way, of a piece of rubber from the end of a leadpencil. If the body is rough and irregular, it may be grasped with a pair of small forceps and removed. Smooth bodies may sometimes be secured by carefully passing a fine tenaculum beyond the body, and removing it by traction. Instrumental removal of foreign bodies should not be attempted except under the most favorable condition in regard to light and instruments. It is better to give an anesthetic than to injure the canal through the patient's unwillingness or inability to hold still.

If the body cannot be removed by careful manipulation through the canal, it will be necessary to detach the auricle and enlarge the canal posteriorly. Injury to the canal, through unskillful attempts to remove a foreign body, should be treated by cold applications until the inflammation subsides, unless there are indications for an immediate radical operation.

50 Euclid Avenue.

SYPHILIS OF THE NOSE AND THROAT.

BY EDWARD DOAK CAPPS, M.D., FORT WORTH, TEX.

Professor of Physiology and Diseases of the Brain and Nervous System, Medical Department Fort Worth University, Oculist and Aurist to Florence Sanitarium, State Masonic Widows' and Orphans' Home, Etc., Etc.

As no tissue or organ in the body is free from the attacks of this disease, the nose and throat come in for their share. Syphilis most often affects these organs in the tertiary stages, and its ravages are fast destructive; in fact, so rapid is the progress of the disease on these organs, that unless the diagnosis is made early, and the treatment vigorous, ugly deformities and injured functions will almost certainly result.

It behooves the practitioner to understand the characteristics of the disease in its effects on these structures, and unless he does, woe be unto his patient.

Primary syphilis in these localities does not produce such harmful effects, and hence, if one fails to make a diagnosis, destruction of tissue to any great extent may not take place. It is my belief that the laity's idea of the painful effects of "catarrh" comes principally from their observing the results of tertiary syphilis. The popular idea of catarrh is that it eats away the tissues as it comes to them, sparing neither soft parts or bone, leaving behind in its ravages holes in the face, swollen noses and eventually descending in the larynx, destroying the voice, and finally into the lungs, even destroying life. This picture is bad, even in syphilis, but the first part is not far, if any, removed from the truth, and there is only one other disease that I now recall, that is likely to produce such results. It is perhaps possible for tubercular disease to have such an effect, though I have not been so fortunate or unfortunate as to see a case, and am inclined to believe that death would occur before such results, from the progress of the disease in more vital parts.

The most frequent locations for syphilis to attack in these organs, are first on the soft palate, a little to one side or the other of the uvula, and second in the nasal septum; less frequent the turbinated bodies are involved, as are also the tonsils and part of the pharyngeal wall. When the soft palate is the seat of the disease, it will be found to be very much swollen, red and tender to the touch and ulcerated. The size of the ulcer depending on the length of

time the patient has gone untreated. The ulcer is often situated on the top of the soft palate so that, unless one examines the case with the rhinoscopic mirror he will overlook it, and will only discover the same when it has ulcerated through the soft palate, and perhaps almost cut the uvula off from that side, the large swollen uvula left to hang down into the throat and produce continual hawking, spitting and coughing from its tickling the tongue and filling the throat. In many instances, the uvula will be found to have ulcerated off at some previous time in which case the ulcer begins a little to one side of the center of the velum palati, and will rapidly extend, involving in one long continuous ulcer, the anterior faucial pillar of the same side. These ulcers progress surprisingly rapid, and even in a few days may produce an immense destruction of tissue, resulting in deformities and pathological conditions which interfere seriously with the voice and other functions of the organs. Ulcers located on or above the soft palate are extremely painful, especially when one swallows or speaks, hence these patients rapidly lose flesh and strength, for the simple reason that deglutition is so painful they can hardly eat.

When the ulcer is in the nose it has the same appearance as on the soft palate. It is more often located on the anterior portion of the septum, leaving behind a hole that varies in size according to the length of time elapsing, before the institution of vigorous treatment. It is here that the disease causes the most distressing deformities, for if not successfully treated, the septum is soon destroyed, the nasal bones likewise, and the "saddle" nose is the result, a mark the unfortunate patient must wear the rest of his days. He tells his friends that catarrh was the cause, and then if they have a little discharge from the nose they have *catarrh*, and then the "quack" is called to reap a harvest.

Where syphilis attacks the turbinated bodies or the post-pharyngeal wall it is not so apt to cause such destruction, or at least the results are not so bad, because of the difference in the importance of the tissues. However, if left untreated, the bodies of the vertebræ may be attacked, and then serious results occur. I have seen two cases where the disease attacked the sphenoid bone, and abscesses formed in the cells of that bone and in the infection extending from the cells into the brain, producing death.

The treatment is local and constitutional; of these two, the constitutional is the most important, and of course is that of tertiary syphilis.

The iodide of potash in rapidly increasing doses to the point of tolerance, has proven most satisfactory in my hands, though I have used mercury with it, with good results. The iodide is given but after a full meal, and should be alternated now and then with a tonic of quinine, iron and strychnine, if given any great length of time and certainly one should never dismiss a case of this kind until he has eradicated every vestige of the disease possible. Locally, alkaline cleansing sprays, *s. e.*, Seiler's tablets, glycothymoline, etc., followed by the application to the ulcerated spot of a ten per cent solution of nitrate of silver, tincture of iodine or pure carbolic acid.

I have found the silver more satisfactory. In applying the iodine or the carbolic acid, the ulcer should first be cocainized, and in many instances it will be found necessary to use cocaine on the ulcer before meals, so that the patient can eat enough to sustain him. The points I would most impress are, first, the necessity of making an early diagnosis, if the ulcer occur on the soft palate; this is easy, for once can almost be sure that such an ulcer is specific, and is due to the breaking down of the gumma. And second, the institution of vigorous constitutional and local treatment.

These accomplished, we would see fewer saddle noses, and less often the so-called nasal twang of voice.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting March 27, 1901.

W. K. SIMPSON, M.D., Chairman.

DR. J. H. ABRAHAM exhibited a lacunar knife which had been considerably modified since its presentation about one year ago. Another instrument presented was a tonsillar punch, which was unique, in that both jaws move. With it he was able to successfully attack all deeply imbedded tonsils.

DR. CORWIN presented an Italian boy of sixteen years, who had come to him with a history of cough and hoarseness, and having a septic condition of the trachea and larynx. He had subsequently removed a large mass of lymphoid tissue from the naso-pharynx. At present there was a thickening of the ventricular bands and adhesion between them for a portion of their length. In phonation the right arytenoid cartilage rides above and across the left one.

DR. T. J. HARRIS reported the case of a woman twenty-seven, with a history of a growth in the nose for about fourteen years. Nothing had been done during all this time, and when seen by him there had been total occlusion of the right side. He had removed a small portion for examination, and the pathologist had reported it to be a melanosarcoma. Under ether he had endeavored to clear the nasal passage, and had succeeded in giving fair breathing space. The antrum was opened and nothing discovered there. Assuming the diagnosis to be correct, he would like to know whether it was justifiable to proceed to an external operation, and what should be its nature. The growth seemed to spring from the region of the anterior turbinate. There had been absolutely no return of the growth in the two months since he had first seen it.

DR. WALTER JOHNSON said that if an operation were to be done, it should be done early, and must of necessity be an extensive one. A position of expectancy would seem to be justified at the present time, especially as the patient objected to an external operation.

DR. M. D. LEDERMAN thought the slow growth of the tumor would be against the diagnosis of melanosarcoma, as in cases of this kind that he had seen the growth had been very rapid. Melano-

sarcoma was particularly rapid in its growth, and soon invaded neighboring cavities. The patient's good general condition spoke against the diagnosis of this very malignant form of growth.

DR. JONATHAN WRIGHT said that the clinical history was entirely opposed to a diagnosis of melanotic sarcoma, as this was a specially malignant form of sarcoma. He had seen a number of apparent sarcomata of the septum in which, so far as the microscopical examination had gone, there had been nothing to distinguish them from malignant growths. In some of these cases the growth had been simply shaved off, and there had been no return. Where the clinical history contradicted the microscope in cases of suspected sarcomatous malignancy, he preferred to rely upon the clinical diagnosis.

Tuberculosis of the Tongue.

DR. W. F. CHAPPELL read a paper on this subject. He said that while primary tuberculosis of the tongue is rare, many secondary infections had been reported. In the past three years, ten secondary tubercular infections of the tongue had come under his observation. In his opinion, any infection of the tongue was doubtful without some surface abrasion, but such abrasions were common. A secondary infection was usually a late manifestation of a pulmonary or laryngeal disease, making its appearance as a nodule at the site of some abrasion. After a time this would break down, forming a fissure or ulcer. In eight of his cases the ulceration had occurred on the tip and sides of the tongue; in two cases the ulceration had appeared first in the center of the tongue near the base. Any painful ulceration in these situations, occurring in a tuberculous individual, was probably tuberculous in its nature. The presence of tubercle bacilli in the ulcer was pretty good evidence of its origin, but these bacilli were not always found. The ulcer was usually flat or irregular, without any surrounding hardness. The base of the ulcer is formed by a tough, glistening membrane of a pearl-gray color, differing totally from anything that he had observed in other ulcerations. No glandular enlargements were observed in any of his cases. There was usually severe pain, generally of an intermittent character. A case, believed to be one of primary tubercular infection, was then reported. The speaker said that the tongue should afford an unusually good opportunity for treatment, and he believed much could be done by individualizing the treatment. If a primary infection, the part should be excised, but in cases of secondary infection he would not advise an operation, so long as the patient's general condition was bad or there were evidences of tubercular activity. The ulcer should be cleansed with peroxide of

hydrogen and Dobell's solution, after which, under cocaine anesthesia, necrosed tissue should be removed by superficial curetting. Then a twenty-five per cent solution of lactic acid or No. 2 creosote solution recommended by him should be applied. The ulcer should be covered with iodoform and benzoin solution, twenty grains to the ounce. The treatment should be repeated daily until red points appear here and there, when Balsam of Peru should be substituted. Later on, a weak nitrate of silver solution would be found a useful application. In any case, improvement would be very slow.

DR. WOLFF FREUDENTHAL said that out of the many cases of tuberculosis of the upper-air passages that he had seen there had been some cases of secondary tuberculosis, but none of primary tuberculosis of the tongue. He had noted secondary tuberculosis of the anterior portion of the tongue. The emulsion of orthoform and menthol, which works so well on the larynx, had proved very disappointing on the tongue. In a previous paper he had tried to show that in most cases the point of entrance was the retropharynx. In his opinion, the hypertrophies found in the retropharynx were all secondary to the action of the tubercle bacillus. In cases of ulceration of the tongue and throat he had been using the electric light treatment, and had found it a very helpful means of treating tuberculosis. The method was absolutely painless.

DR. E. MAYER looked upon this as a primary lupus of the larynx, beginning in the epiglottis. The presence of a very few bacilli and the general history pointed to this diagnosis, and thus made the case a very rare one.

DR. WRIGHT said that he had seen some of the microscopical specimens from Dr. Coakley's case, and must admit that the case had been well proven. Post-mortem evidence seemed to prove that the infection of the cervical glands was an ascending one from the lungs in adults and a descending one from the pharynx in children. If scrapings were made from the crypts of a tonsil one would be astounded at the enormous number of bacteria present, yet it was exceedingly rare to find them under the epithelium. However, dust particles of the same relative size would be found passing through the epithelium in large numbers. Apparently the bacteria were kept out not by the mechanical action of the epithelia but by the destructive action of the juice of the underlying lymph cells. In cases in which the tonsils of tuberculous individuals had been studied he had noted that the cocci were present once in enormous numbers, forming abscesses here and there. Evidently the chemistry of the lymphoid tissue was the determining factor in infection, through the tonsils.

DR. H. L. SWAIN, of New Haven, said that it was extremely rare that one was called upon to deal with tuberculosis of the tonsils. He had never seen a case of primary tuberculosis of the tongue, and only a few secondary ones. The explanation was apparently that given by Dr. Wright. Those who had seen autopsies on children, and had noted the large number of glands in the mediastinum which are evidently tubercular, must know that many cases seemingly primary are really secondary.

DR. WENDELL C. PHILLIPS said that after Dr. Wright's remarks it seemed clearer why we occasionally meet with glandular complications in connection with other diseases. About one year ago he had written a paper calling attention to the glandular complications of tonsillar inflammations occurring in connection with the grip epidemic of 1899. Suppurative glandular complications, it had been quite generally agreed, had been very common in connection with that epidemic, and the glands had become infected from the tonsils.

Clinical Experience with Adrenalin.

DR. EMIL MAYER read this paper, and reported briefly on thirty-five rhinological cases in which adrenalin had been used by him. He said that Dr. Jokichi Takamine, of New York City, had succeeded in isolating the blood-pressure-raising principle of the suprarenal gland and had named it adrenalin. It is a light white crystalline substance having a slightly bitter taste. It is slightly alkaline in reaction, and is soluble in cold water with difficulty, and more readily in hot water. It is easily oxidized by the air, changing to pink, red and brown. It is such a powerful astringent that a solution of the strength of 1 to 10,000 blanches the conjunctiva, thus being at least 625 times the strength of the suprarenal extract. The solution changes color slowly, and in five or six weeks presents the flocculi seen in solutions of cocaine and morphine. This could be prevented by the addition of chloretone, but even without this the solution would maintain its efficiency. Adrenalin was now made up in the form of tablets, one of which dissolved in half an ounce of water gives a solution of the strength of 1 to 10,000. This is sufficiently strong for all operative cases, while 1 in 500 or 1 in 600 would answer for ordinary local applications. In none of his cases had there been any constitutional disturbance following its use.

DR. JOKICHI TAKAMINE, having been invited to open the discussion, said: At the outset I wish to thank you for the honor you have done me by giving me an opportunity of coming here and of now asking me to discuss the interesting paper we have just heard

read. Needless to say I have been very much interested in all Dr. Mayer has said. In his opening remarks he said something about the suprarenal extract being a good culture medium. The same idea was forced on my attention when I was beginning my investigations. In fact I thought it was nothing but suprarenal soup—something similar to oxtail. Not being a medical man, I am unable to add any information to that you have already received from a medical or clinical standpoint, but there are one or two chemical and physiological characteristics of the extract to which I would like to call attention. As the author of the paper has said, several investigators have been at work upon it for some time, and two of them claimed to have succeeded in isolating the active principle of the gland—I refer to Professor Abel, of Johns Hopkins University, and Dr. Furth, of Strasbourg. There still exists a controversy between them as to which of the two substances they have discovered is the real thing. But without going into what they have done I may say this, that the substance which I have isolated is in basic form and alkaline form, which neither of the substances isolated by them is. The substances isolated by Professor Abel and Dr. Furth were in the form of compounds or salts of the active principle in more or less impure condition, that is more or less mixed with foreign bodies. My substance (on the other hand) is crystallized, and I think this is nature's certificate, that it is a definite chemical composition and not the result of any arbitrary mixture—nature's certificate in short that it is the actual substance of which we have been in search, the active principle of the supra-renal gland. Its natural tendency, moreover, is always to resolve itself into a crystalline form. You take one form of crystal for instance, and dissolve it in hot water, and you find if you subsequently evaporate the water that it resumes its crystalline form, just in the same way that sugar does." This effect, so far as I am aware, has not been obtained with any previous substance claiming to be the active principle of the suprarenal gland. Therefore, I can claim at all events to have gone a step or two further than my predecessors in this line of investigation, and if you take into account the marvellous physiological strength of the minutest particle of this substance, and at the same time consider the chemical reactions which it causes, I think you will admit that the substance before you must be what I claim it to be. Now I wish to conduct one or two experiments with the view of showing you some of the properties possessed by this substance. Here I have a solution of adrenalin, 1 to 10,000 in water. Into it I put a drop of ferric chloride—just a drop, observe, and in a few moments

you will observe this colorless solution will change to a beautiful green. That is one characteristic change of the active principle. Next we find that by the careful addition of alkali the green color can be changed into a beautiful red, while by the addition of a few drops of caustic soda to neutralize the alkali you can change the red color back into green—thus giving you both ends of the drug store. Now I will conduct another experiment to show you the strong power of the substance as a reducing agent. I again take a solution of 1 to 10,000, and into it I put a few drops of solution of chloride of gold. Inside of five or ten minutes this colorless solution will gradually change first to a pinkish and then to a purplish red, and in a few minutes more the solution of chloride of gold will be reduced to metallic form. This is another characteristic change which adrenalin produces. Now I wish to direct your attention to the diagrams on the wall which show the effect of adrenalin on the blood pressure. Its strength in this respect is shown by the fact that 1 c.c. of a chloride solution 1 to 100,000 intravenously injected has a very striking effect. You will observe that within a few seconds the blood pressure rises, and then gradually comes down. The amount of adrenalin injected into a dog weighing 8 kilos was .00001 gram, which is equivalent to .00000125 grams per kilo body weight, which shows a very wonderful amount of strength. Another demonstration is a very easy one. If you take a very weak solution you will find that the conjunctiva of the eye can be blanched in a very few moments. I have tried how far the solutions can be diluted and still retain this blanching power, and I found that a drop of as weak a solution as 1 to 1,500,000 is sufficient to blanch the eyelid within a minute. In this case the blanching does not last very long, but still the effect is sufficient to show how remarkably strong the substance is. This means that one of the tablets of adrenalin tartrate which I have here when dissolved in two gallons of water will show the activity of the substance on the eyelid, or in other words, one drop of the solution of 1 to 1000 which is now before you when put into an ounce of water or normal salt solution will suffice for this purpose. When I first made up bottles of adrenalin for experimental purposes some of them developed a growth similar to what you find in cocaine and ether, but I have since removed that objection by adding a little preservative. Chloretone I have found to act very nicely, a small quantity of it being quite sufficient to do away with the sediment. Apart from this, however, I have done away with the necessity of keeping the preparation in solution by getting it made up in the tablets of which I have some specimens

here. Another point I wish to direct attention to is this, that the properties of the substance are not destroyed by heat, and therefore a solution can readily be made sterile by boiling it, which you can do for whatever time you please without destroying the drug. I beg to thank the members of the society for the attention they have given me.

DR. W. H. BATES said that he had been making tests with adrenalin for the past four months. It certainly was a wonderful astringent, hemostatic and heart stimulant. Mention was made of a case under chloroform anesthesia in which the pulse had dropped to thirty a minute during a mastoid operation, and had become almost imperceptible, yet by the use of ten drops of adrenalin chloride solution by mouth, representing about $\frac{1}{1000}$ of a grain, the heart had been very promptly and marvelously stimulated. The solutions of adrenalin do not keep any better than do solutions of atropin, and he had caused infection of the eye from the use of an apparently sweet solution of adrenalin, which, however, on microscopical examination had been found to contain fungi. He had found by repeated tests that chloretone does not preserve adrenalin solutions. After exposure to the air for a few days a precipitate would appear containing bacteria. While boric acid and resorcin would prevent any change in the odor of the solution, the solution would be found after a time to be swarming with bacteria. Solutions of adrenalin on exposure to the air lose much of their physiological action. He would recommend the avoidance of preservatives and reliance upon sterilization.

DR. N. H. WILSON said that he had used adrenalin quite extensively since last October, and with uniformly good results, except in cases of epistaxis or where there is a free flow of blood. He did not find that it was very easily absorbed by the stomach. A case of scurvy with severe hemorrhage was cited, in which the hemorrhage had been promptly checked by the absorption of the adrenalin from the mucous membrane of the mouth.

DR. T. R. CHAMBERS said that he had used adrenalin in a case of syphilitic iritis, and had found that it hastened the cure. In rheumatic iritis this same treatment had given a great deal of pain, although the eye was better the next day. He had tried it in a typical case of Grave's disease without any effect on the eye or upon the pulse. In acute and subacute laryngitis, in combination with orthoform, its action had been most brilliant.

DR. MAYER: I have only a word or two to say in reply to the points raised in the discussion. Incidentally I may say that the drug

has been used in the clinic of Dr. Asch as well as in my own, and there also good results were obtained. The whole question of the suprarenal gland and its derivatives I admit is not yet fully understood by any of us, but this discovery by Dr. Takamine should be of great use in advancing our knowledge of their properties. So great a confidence did I acquire in adrenalin in the course of my experiment that I may mention that in two cases I did not pack the noses after operation, and no secondary hemorrhage occurred. In regard to epistaxis, in which one of the speakers has said he found it did not succeed, I can only repeat that I used it in such cases with satisfactory results. Dr. Gleason, of Philadelphia, I understand has also been experimenting with the drug and has obtained good results in cases of pharyngitis. Summing up I may say that I believe that in adrenalin we have a remedy of very far-reaching possibilities, and I agree with the mover of the resolution that we are under a very deep debt of gratitude.

DR. TAKAMINE: I have to thank Dr. Bates for pointing out the weak points in the preparation. I am trying to improve all these things as much as I can. With regard to the existence of bacteria or fungus growth, it all depends on the extent to which you expose the solution. The same thing applies to almost every other preparation. In fact if you take distilled water and expose it long enough to the air the chances are that it will get infection. Adrenalin being of organic origin is of course more likely to become infected in a shorter period of time than water. In such cases as affections of the eye where the organs are peculiarly sensitive, it goes without saying that it is necessary to be more than ordinarily careful about the sterilization of any substance that is to be used as hemostatic or remedial agent. Therefore, when adrenalin is to be used in such cases, all you have to do is to boil the solution, and if that does not do boil it again, say for twenty-four hours if you like. I am aware that the first samples of adrenalin I gave out were not quite right, but since I have added chloretone I am perfectly satisfied as to the stability of the preparation for all practical purposes. I have made up a thousand bottles with chloretone which have not yet been opened, and they remain perfectly bright. Those that have been opened I admit we cannot be sure of. I hope by means of further investigations along this line to be able to produce a substance that will be perfectly stable. I beg to thank the Society for its kindness in giving me an opportunity to address it, and also for the very kind reception it has given me.

LARYNGOLOGICAL SOCIETY OF LONDON.

SIXTY-FOURTH ORDINARY MEETING, MARCH 8, 1901.

E. CRESSWELL BABER, M.B., President, in the Chair.

The following cases and specimens were shown:

A Case of Malignant Disease of the Larynx in a Man æt. Forty-seven, Treated by Thyrotomy and Removal of the Diseased Area, Shown Seven Months After Operation.

Shown by SIR FELIX SEMON. Mr. F. J. B., æt. forty-seven, was sent to me on July 4, 1900. He had been suffering from hoarseness for several months past. This was the only symptom.

On examination the right vocal cord was found to be much tumefied in the middle part and ulcerated in front, the ulceration extended into the subglottic cavity, and the mobility of the cord was much affected; the left side was quite free. Iodide of potassium failed to exercise any effect, and thyrotomy was performed on July 16, 1900. When the larynx had been opened, it was found that the new growth was a good deal more extensive than it had appeared from laryngoscopic examination. It not only occupied the whole right half of the larynx, completely destroying the right vocal cord, but also extended below the anterior commissure to the front part of the subglottic cavity, and attacked the front part of the lower surface of the left vocal cord. On the other hand, it was well circumscribed. When the growth was removed it was found that it deeply infiltrated the thyroid cartilage, both on the right side of the subglottic cavity and on the left side of the anterior commissure. It was removed together with an area of apparently healthy tissue, and the parts were very energetically scraped, so that everywhere healthy cartilage was visible. Considering the condition just described, the chances with regard to recurrence appeared rather doubtful. The parts removed were examined by Mr. Shattock, who reported that the growth was a typical squamous-celled carcinoma. The patient made an uninterrupted recovery, and returned home on July 26th, ten days after operation.

Four months later Mr. Cecil Powell, of Stoney Stratford, reported for Dr. Maguire that the patient was getting on very satis-

factorily, his general health had much improved, he had gained in weight, and the voice, which had been quite aphonic, had slightly increased in strength.

When I saw him on February 11th, *i. e.*, seven months after operation, he was, as he is now, in excellent health, there being not the least trace of recurrence, and the voice, although still hoarse, had gained a good deal in strength since the operation. On phonation the remnant of the left vocal cord somewhat crossed the middle line, but only in front reached the cicatricial ridge which replaces the removed right vocal cord.

MR. P. DE SANTI asked Sir Felix Semon the percentage of absolute recoveries in the cases on which he had operated. He knew the general percentage, but it would be interesting to hear what were his individual figures.

SIR FELIX SEMON hoped the voice would continue to improve. His experience was that the improvement continued up to the end of the first year, and even after that in some cases. In reply to Mr. de Santi, he said his last cases, namely those of the past eighteen months, had not been tabulated, but excluding these his permanent cures were 83.3 per cent.

Specimen of Retention Cysts of the Lymphoid Follicles of the Vallècula.

Shown by MR. H. BETHAM ROBINSON. This specimen was removed from a healthy man *æt.* twenty-five, who complained of a lump in his throat and occasional pain in the neck.

On examination, both by means of the tongue depressor and the laryngeal mirror, some whitish *lumps* were seen at the base of the tongue, standing out above the level of the mucous membrane, and situated about the outer margin of the vallecule; on the right side was a single large one, the size of a sixpence, and on the left side were three smaller ones.

Under cocaine they were removed with scissors and forceps.

The histological examination of these growths corroborates the clinical diagnosis. They consist of tonsillar tissue with retained products in the follicles.

The specimen seemed to him worth bringing to the notice of the Society, as he could not find any record of this condition.

Case of Chronic Laryngitis with Thickening over the Cricoid Posteriorly.

Shown by MR. H. BETHAM ROBINSON. The patient, a man *æt.* forty-four, complained of aching pain at the back of the neck and some pain on swallowing. There was no history of tubercle or syphilis; no cough, and no loss of flesh. His voice was husky and

weak. There was general chronic laryngeal catarrh, with marked thickening of soft parts in the middle line posteriorly, and also definite subglottic thickening of the true cords.

Under the application of chloride of zinc all the symptoms and signs of catarrh had disappeared, with the exception of the posterior thickening.

Two Cases of Recent Perforations of the Septal Cartilage.

Shown by MR. H. BETHAM ROBINSON. The first case was of tuberculous origin, and occurred in a lad *æt.* twenty, who first noticed both his nostrils blocked in January, 1899. After a little while there was discharge from the right nostril, and later from the left. There was no pain except when the nostrils were completely blocked by crusts.

At the beginning of February, 1901, he was found to have a circular perforation in the septal cartilage, with thickened margins covered by gray watery exuberant granulations. These were curetted away, and lactic acid, twenty per cent, rubbed in, after which iodoform ointment was applied. He had very much improved under this treatment.

The second case occurred in an engine-driver, *æt.* forty-three, who complained of discharge from right nostril.

When first seen there were black crusts on either side of the cartilaginous septum, but no evidence of a perforation could be discovered by means of a probe. On the left side there was a small angular spur.

Over the right temple was a small indurated spot, and there was enlargement of the pre-auricular and cervical glands, probably secondary to the spot.

There was no history of tubercle, but a definite one of syphilis eighteen years before.

When next seen, sixteen days later, there was an oval perforation in the cartilage only, without any thickening of the edges, and the glands in the neck were breaking down.

The question here was whether the perforation, limited as it was to the cartilage, was induced by the trauma (picking), or whether syphilis played any part in its production.

The PRESIDENT said that the first case was undoubtedly tubercular, and that the other might be either a syphilitic lesion or a simple perforation. The bone was not exposed, and the perforation was entirely in the cartilage, which was in favor of its being of a simple character.

DR. DUNDAS GRANT asked if Mr. Robinson had seen the case at the stage of the gumma.

MR. BETHAM ROBINSON said the patient referred to when first seen had simply a black mass where the perforation was now situated, which looked very much like necrosed cartilage. There was no hole then, but when he next saw the case he found the perforation in its present position. The septum broke down very rapidly. The softening glands in the neck might possibly be of syphilitic origin.

A Case of (?) Sarcoma of Tongue and Fauces.

Shown by MR. H. BETHAM ROBINSON. The patient, a married woman *æt.* forty-nine, was first seen on February 20th last, and then gave the following history. She had noticed no symptoms before a month ago. Her throat then felt ulcerated, and something seemed to burst; there was a slight bleeding, but no matter. The bleeding had not been repeated, and there was no pain or dyspœna, but with the increase in size of the tumor eating and drinking had become difficult. Her appearance corresponded with her acknowledged good health. There was no history of syphilis or tubercle.

On examination over the left posterior half of the tongue there was a somewhat circular swelling, the edge of which was raised fully one-eighth of an inch above the surface of the tongue. It extended backwards and downwards, involving the left tonsillar region by the side of the epiglottis. The tongue movements were remarkably free, and the growth, though extensive superficially, evidently did not penetrate to any depth into the substance of the tongue. The surface of the swelling did not seem ulcerated, and (on February 20th) there was only one slightly enlarged gland at the angle of the jaw.

Since the patient was first seen the glands on the left side have become considerably enlarged and matted; this might be explained by an attack of influenza during the past few days.

The pathologist considered the tumour to be a mixed sarcoma, but Mr. Robinson thought that syphiloma was by no means improbable. This view was to some extent borne out by the following points: The age of patient, her good health, the rapid growth, the absence of pain, and the tardy involvement of glands. On this supposition, iodide of potash had been given for the past week with some improvement.

THE PRESIDENT remarked on the interesting nature of the case. Its character was doubtful. Antisyphilitic treatment ought to be tried.

MR. SPENCER thought from the clinical appearance and from the microscopical specimen that the case was one of gumma.

SIR FELIX SEMON asked if the painlessness was not in favor of syphilis as against malignancy.

MR. BETHAM ROBINSON, in reply, said the growth was called "sarcoma" because this was the opinion expressed in the pathologist's report. He favored syphilis himself.

Case of a Male *Æt.* Twenty-Six With the Left Vocal Cord in the cadaveric Position, Right Facial Palsy, and Paralysis of the Right Genio-Hyoglossus and the Left Half of the Soft Palate.

Shown by DR. HAVILLAND HALL. T. I.—, *æt.* twenty-six, corporal 6th Lancers. Has had five and a half years' service in India. Has since been in South Africa. Has not had fever. Acute rheumatism in July, 1900. Admits gonorrhœa but no history of syphilis.

Patient was on active service in the recent South African campaign. Two days after embarking for England from Cape Town patient first noticed a difficulty in swallowing. This steadily increased, and reached its maximum in fifteen days. Two days after landing at Southampton he first noticed a difficulty in speech, which is now so pronounced. This also gradually increased, and became stationary in about nine days. This period was also marked by the first appearance of the hacking, brassy cough, which was very distressing on admission into hospital. Patient had not noticed the right facial paralysis or the weakness on the right side until they were pointed out to him in the hospital.

There is no history of headache, fits, or vesical or rectal trouble during the development of the present illness, and it is remarkable that the patient has never had to lie up, or been in any way incapacitated from going about while the symptoms have been manifesting themselves.

Condition on Admission.—No headache, vomiting or optic neuritis; intellect clear; no aphasia; speech markedly affected. Difficulty with labials and linguals to some extent, but great hoarseness also.

Eyes react to light and accommodation; no ophthalmoplegia of any kind; no nystagmus; paralysis of whole of right seventh, and deafness of right ear. Paralysis of right genio-hyoglossus. Tongue cannot be deflected to left side. Palsy of left side of soft palate; left vocal cord in cadaveric position.

Both sterno-mastoids and trapezii act equally well. Marked weakness on right side of body (both limbs). Both knee-jerks abolished; no ankle-clonus; plantar reflexes normal.

No sensory disturbance of any kind in body or limbs; some blunting of sensation in fauces, palate and posterior pharyngeal wall.

A disseminated subacute polio-encephalitis is suggested as the probable cause of the condition.

The patient has had iodide and mercury in full doses, but without any apparent amelioration of his symptoms.

Case of Extreme Deflection of Septum to Right Side, Causing Almost Complete Unilateral Obstruction, in a Male æt. Twenty.

Shown by DR. PEGLER. In this case there was considerable deviation of the right nasal bone with discoloration and thickening. The patient sought advice more for the disfigurement than for the obstruction to breathing or deadness of his voice. There was a history of a fall at the age of three. The case was shown to elicit from members whether in such an extreme case as this there seemed a prospect of a good result from a sawing operation, or whether one of the methods of fracturing and forcible straightening of the septum appeared preferable.

DR. HERBERT TILLEY thought that the best treatment would be to saw off the projection in the right nostril. It was not a suitable case for Asch's operation, because the space in the left nasal cavity was already none too large for breathing purposes, and the result of Asch's operation would be to still further occlude the left side without making much difference on the right. The great thickening of the nasal bone on the right side was interesting. According to the patient, this had been present since the fall which caused the septal deflection. It would seem to be one of those cases of traumatic periostitis of the bone, examples of which had already been shown to the society at previous meetings.

DR. PEGLER, in reply, thanked the members for their suggestions. He should try the saw as suggested in the first instance, as he had had on the whole better successes in these cases by that means than by performing an Asch or one of its modifications. The careful use of splits or adhesion preventers would be an important part of the after treatment.

Case of Malignant Disease (Extrinsic) on the Left Side of the Larynx in a Male æt. Fifty-six.

Shown by DR. PEGLER. In this case there was also a malignant involvement of some glands on the same side of the neck. The case was shown to ascertain the feeling of members as to question of performing complete extirpation, the patient being willing to submit to any operation proposed for his relief. The history only extended back four months; voice not affected.

MR. P. DE SANTI was strongly of opinion that the case should be left severely alone. The man had a large mass of glands on the left side, which were very hard and fixed. There were sure to be other glands deeper down, and it would be impossible to remove these, and therefore impossible to remove the whole disease.

Case of Malignant Disease of the Tonsil.

Shown by DR. JOBSON HORNE. The patient, a man *æt.* sixty, states that the symptoms of the throat affection from which he is suffering are of not more than five months' duration. At first he experienced a soreness on the right side, more painful on swallowing; this steadily increased, and now deglutition is most difficult and painful.

There is considerable glandular enlargement on the right and also on the left side, and obvious swelling about the angle of the jaw, and under the chin there is a discharging sinus.

The jaw can be only partially opened, and the tongue cannot be protruded. The right tonsil is enlarged, extending across middle line, on the surface of which is an ulcer with thickened edges. The ulceration is extending on to the soft palate.

Recently he has experienced pain in the region of the left tonsil. There is no history of syphilis obtainable. He abstains from spirits, and only smokes half an ounce of tobacco a week in a clean pipe. Since February 26th he has taken thirty grains of *pot. iod.* a day, and has experienced relief.

The case is shown in the hope of eliciting suggestions as to etiology, and for affording relief by either medicinal or operative measures.

Case of Total Extirpation of the Larynx.

Shown by DR. GLEGG for MR. HARVEY. When admitted to hospital this patient a man *æt.* forty-eight, was not in good general condition.

On examination a sessile growth the size of a large bean was seen situated on an infiltrated base just below the right aryteno-epiglottidean fold, and running obliquely down over ventricular band and hiding the anterior two thirds of vocal cord. The right side of larynx was fixed, and the posterior third of the vocal cord, which was alone visible, was seen to be motionless and white. The left side of the larynx and the vocal cord moved freely. There was an indefinite thickening on right side of neck opposite the level of thyroid cartilage (enlarged gland?). The respiration was comfortable although there did not seem to be very much room. The voice was hoarse. The patient could only take fluids owing to obstruction to passage of solids, but had no pain.

History.—Until six months before operation the patient never had any trouble with the throat. About that time he had a little difficulty in swallowing and a feeling of gurgling in the throat. About two months before operation had pneumonia, temperature

reaching 105° , and suffered from great dyspnea, so much so that tracheotomy was contemplated. During the next two months he was hoarse on and off, gradually getting worse; there was increased difficulty in swallowing, the cough was often severe, and there was much phlegm in throat, and occasional slight earache. He could swallow solids until two days before admission. Had been a heavy smoker and also drank freely. He had suffered from winter cough, and lately some wasting. There was a history of syphilis twenty-five years ago; he had been taken iodide of potassium without any benefit. A piece of the growth was removed and examined microscopically, and the diagnosis of epithelioma was confirmed.

On July 25, 1900, the operation of total extirpation of the larynx was performed by Mr. Harvy, and it was then found that on the right side, at the level of the inferior cornu of thyroid, the growth had perforated into the neck through the posterior part of the cricothyroid membrane.

The patient's health remained good, and the local condition satisfactory up to December, 1900, when he presented himself for examination, and a large, hard, irregular gland was found and removed from the sheath of the jugular above the level of the great cornu of the hyoid on the left side. He has now a Gluck's artificial larynx, whereby a loud whisper can be produced and conversation can readily be carried on, and his health appears to be quite satisfactory.

Case of Extreme Elongation of Uvula.

Shown by DR. H. J. DAVIS. This patient, a male *æt.* fifty-two, is the subject of left hemiplegia and old nasal and laryngeal trouble. He sought relief for stridor and dyspnea associated with complete abductor paralysis of right cord.

The cords now move well, and there is no stridor, and I am simply showing him as a curiosity for another season. He has the longest uvula I have ever seen. It hangs like a pigtail from his fauces, and when he protrudes his tongue—which organ is also of unusual length—you can see without the help of a spatula the uvula lolling on to the epiglottis.

DR. DAVIS, in answer to a question, said the man had a slight cough, but the physical signs in the chest accounted for it. The patient did not wish to be operated upon; there was slight anesthesia of the pharynx.

SIR FELIX SEMON said he thought the scarring would account for the anesthesia of the pharynx.

Specimens of Post-Nasal Growths Removed "En Masse" With a Curette.

Shown by DR. H. J. DAVIS. These specimens, besides demonstrating the size to which such growths may develop, show:

- (1) Two lateral masses attached to the median raphe.
 - (2) Another specimen of the same in which the growth is studded with white specks, similar to that observed in follicular tonsillitis.
 - (3) A mass at free border of which is an ulcerated area containing pus and calcareous matter. This was removed from a child *æt.* seven, with enlarged cervical glands and probably tubercular.
 - (4) A central mass with a largish vessel entering upper surface.
- They have been preserved in spirit since last June, and are therefore much shrunken, but the sulci and convolutions are very well marked.

A Case of Submucous Hemorrhage of Soft Palate.

Shown by MR. DE SANTI. This occurred in a man and was the size of a walnut. It had appeared suddenly whilst eating some crusts of bread, and was in all probability due to bruising therefrom. He had had two similar attacks, once on the back of tongue and once underneath the tongue in the floor of the mouth.

When first seen by Mr. de Santi there was an ulcer in the right glosso-epiglottic fossa, on both sides of which there were enlarged veins. The hemorrhage from the back of the tongue had probably come from the right glosso-epiglottic fossa.

The man was not a "bleeder."

Unfortunately all traces of the hæmatoma had by now disappeared, and also the ulcer already referred to.

Drawing of Congenital Fenestration of the Fauical Pillars.

Shown by DR. WATSON WILLIAMS. This was shown in reference to the cases and drawings brought forward at the previous meetings of the Society. It depicted another case of probable congenital malformation.

Case of Fixation of the Left Vocal Cord and Empyema of Right Maxillary Antrum.

Shown by DR. DUNDAS GRANT. Frances T—, *æt.* forty-four, married, came under my observation on February 14, 1901, complaining of hoarseness and dyspnœa on exertion, and a frequent catch in the breathing. The hoarseness had been present to a slight degree for from eighteen to twenty years, and had been gradually

getting worse. On examination the left vocal cord was found to be absolutely fixed in the median position, its edge being markedly concave. Both cords had lost their lustre, and were distinctly congested. There appeared to be an abnormal degree of fulness round the base of the arytaenoid cartilage in the left hyoid fossa. There was a slight movement of the left cornicula. The movement of the right vocal cord was not quite complete. There appeared to be a rounded fulness under the left vocal cord, but this proved to be due to a shadow cast by a very dark greenish pellet of inspissated muco-pus adhering to the lower surface of the right vocal cord. On inspection of the naso-pharynx there was found to be a small collection of muco-pus in the neighborhood of the right middle turbinated body, and on anterior inspection there was found a polypoid enlargement of the middle turbinated body. On transillumination the right antrum showed comparative opacity, and when it was punctured a considerable amount of fœtid muco-pus was washed out. The frontal sinuses were perfectly translucent. There is a slight flattening of the bridge of the nose, attributed to compression at birth.

She is the twelfth of a family of fourteen, of whom only two others survive. The brother, two years older than herself, died at fourteen of scarlet fever. Her father lived to very old age; her mother died at forty-four of dropsy, probably from heart disease. There are believed to have been several miscarriages. The patient has had seven children, of whom two have died; no miscarriages. She is somewhat anemic, the palate is paretic, the pupils contract to light, and the knee-jerks are normal. The expulsion of the inspissated muco-purulent crusts in the larynx has been greatly facilitated by the inhalation of turpentine in warm water, and by the occasional injection of 10 per cent menthol in olive oil into the trachea, the voice having become much clearer and the breathing much freer. She has been washing out the nasal passages, and it is proposed to puncture the antrum without delay. There is no evidence of abnormality in the thorax, and the laryngeal affection is probably maintained by the nasal suppurration.

DR. DE HAVILLAND HALL thought it was an affection of the joint rather than a paralytic one. There certainly seemed to be on comparison with the right cord a difference in the shape, the left arytaenoid being more round and full.

DR. DUNDAS GRANT was glad to hear Dr. Hall's confirmation of his own opinion. The swelling was extremely small, and consequently left room for a considerable difference of opinion.

Case of Tumor of the Vocal Cord in a Boy.

Shown by W. G. SPENCER. This boy, æt. twelve, has a tumor obscuring the right vocal cord, also a swelling in the right leg groin.

Huskiness in speech was first noticed a year ago, which has increased, until now he is very hoarse.

The swelling in the right leg began five years ago, after a blow from a stone. It disappeared, to return six months ago. The patient presents no other evidences of inherited syphilis. In the larynx there is nothing abnormal except a tumor, which obscures the right vocal cord. The swelling is red in color, has a smooth glistening surface, and shows no sign of ulceration or hemorrhage. When the glottis closes it seems to come in contact with, and then to pass somewhat over, the left vocal cord. But the right vocal cord vibrates freely during vocalization, as shown by the fact that the vocal fremitus to be felt in the crico-thyroid space seems to be equal on the two sides.

The swelling in the leg involves the upper and inner surface of the tibia; the skin is discolored; two apparently periosteal nodes are to be felt on the tibia, from which extend backwards to the popliteal space an induration of the skin and subcutaneous tissue. The swelling is tender, and there is pain, especially at night. The femoral glands below and the iliac glands above Poupart's ligament are a little enlarged, but soft and discrete.

DR. DE HAVILLAND HALL asked if any one would have suggested that the laryngeal condition was of syphilitic origin from the local appearances without reference to the tumor in the leg. To his mind the cord gave no suggestion of a specific lesion. He thought that it was a tumefaction rather than a distinct tumor, and he should have had no idea of suspecting syphilis unless he had seen the leg.

DR. LAMBERT LACK thought that some members might remember a similar case shown to the Society by Dr. W. H. Kelson. In this case also there were no definite signs of inherited syphilis. The indefinite outline of the swelling on the ventricular band and the fixation of the cord pointed to its being of an inflammatory origin.

DR. STCLAIR THOMSON said there was nothing in the appearance of the laryngeal condition indicative of a specific lesion. It agreed with what was commonly described as prolapse of the ventricle, but which was really inflammatory hypertrophy of the ventricle of Morgagni. Perhaps the case might be treated first with anti-specific remedies to see what the result would be before resorting to surgical or other treatment.

DR. BOND did not think it was specific, and he doubted whether the leg was, for there was a distinct history of injury at the beginning.

MR. SPENCER, in reply, said the cord was not fixed; vocal fremitus was obtained equally on both sides. He thanked Dr. Lack

for recalling the case of Dr. Kelson to his mind. This might be a gummatous infiltration. With regard to Dr. Bond's remarks to the effect that the tumor in the leg might be due to the stone which injured the boy five years ago, it was rather a long time for a traumatic osteitis to be gradually going on. The injury might have localized the gumma in that particular position. He would treat the case with pot. iod. and show it again in a month's time.

A Laryngeal Case for Diagnosis.

Shown by DR. PERMEWAN. The patient, a man æt. fifty-five, was sent to him four weeks ago suffering from dysphagia.

On examination a small circular white tumor about the size of a sixpence, low down on the back of the pharynx, could be seen on depression of the tongue. Laryngoscopically there was swelling of both aryteno-epiglottic folds, and behind the right arytenoid cartilage there was a whitish, granular-looking polypoid swelling. The left side of the larynx and left vocal cord were quite immobile, there being apparently fixation of the cord very near the median line.

The small growth was removed with a snare, and on examination was pronounced by a pathologist to be "inflammatory." The patient was ordered iodide of potassium. Three weeks afterwards the patient was seen again, and there was some apparent recurrence of the pharyngeal growth, but otherwise the appearances were unchanged. Dr. Permewan desired the opinions of the society on the nature, prognosis and treatment of this case.

SIR FELIX SEMON would not commit himself definitely, but he was inclined to think that the various projections in the pharynx on the left and right side originated from one and the same general infiltration, which also caused the fixation of the left half of the larynx. He thought the whole thing was malignant.

MR. SPENCER thought that it might be syphilitic, but if not that it was most likely malignant. He had shown a large number of cases to Dr. de Havilland Hall at the Westminster Hospital, in which malignant disease of the lower part of the pharynx had gone unnoticed for a long time. The primary growth in that situation was exceedingly small. In this connection he instanced the case of a man who had a growth for a long time not quite as large as a threepenny piece, and indurated glands on each side of the neck. He had seen six cases in two years of malignant growth of the lower portion of the pharynx, and in one or two there were indurated glands in the neck, these latter having been sent to him with the request to take away the glands; in none could he see any chance of doing good by surgery.

DR. DUNDAS GRANT brought before the Society about a year ago a man with an extremely small growth in the wall of the pharynx, similar to that seen on the left side in Dr. Permewan's patient. His case was made easier in diagnosis by the involvement of the glands.

There was room for some doubt as to whether or not it was malignant so far as its appearance was concerned, but the extreme hardness on palpation made it pretty evident what the real nature of the case was. Eventually the man died in the Cancer Hospital of malignant disease. It was certainly singular to have a large growth on one side and the cord fixed on the other.

DR. BOND was disposed to think it malignant, though one might be led astray by the pathological report on the piece removed, which was reported to be of an inflammatory nature. Evidently there was extensive mischief. It was very uncommon to see two separate patches of apparently malignant growth, but the intervening tissue was no doubt quite infiltrated. Commonly, when one examined masses of this nature with the fingers, one made out very evident hardness and induration of the growth and surrounding parts. In this case the growth was quite soft. He showed such a case some three years ago. He thought this case a similar one, and that it was malignant.

DR. FITZGERALD POWELL remarked that, with all due deference to the distinguished opinions which had been given, he could not help having a strong suspicion that the case might prove to be specific in character; he had elicited the fact that the man's wife had had three miscarriages, and he certainly thought that he should be treated by antispecific remedies.

DR. PERMEWAN, in reply, agreed on the probable malignant character of the case. He would, however, give iodide of potassium freely and report the result to the Society. He thanked Dr. Bond for the suggestion as to palpating these growths as well as examining them laryngoscopically.

A Laryngeal Case for Diagnosis.

Shown by DR. BENNETT. P., male, æt. thirty-one, a teacher, was first seen in September, 1900, on account of hoarseness of one month's duration. Examination of the larynx revealed the presence of what appeared to be a small granulating surface immediately below the anterior commissure of the cords, and involving to a very slight degree the anterior inner margin of the left vocal cord. On two or three occasions this surface was curetted and a small amount of granulation tissue removed. Nothing had been done to it for the last three months. The voice is now better, though not clear. There is still a small swelling visible, and the opinion of members of the Society is invited as to the nature of the condition.

DR. STCLAIR THOMSON had perhaps not listened attentively to Dr. Bennett's description of his case, but he had obtained a very complete view of the whole length of the cords, and on phonation no thickening was visible in the anterior commissure. On respiration a slight thickening was seen in the anterior subglottic region. This was not an uncommon condition; it did not interfere with the action of the cords, and he therefore thought that the cause of any impairment of voice must be sought for elsewhere.

INTERNATIONAL MEDICAL CONGRESS.

SECTION OF OTOTOLOGY—CONCLUSION.

(Proceedings concluded.)

Session of August 7—Morning.

At the opening of the session, the sections of laryngology and otology, being together, carried the motion of Sir Felix Semon, seconded by Prof. Chiari, to have separation and independence of the two sections in future International Congresses.

Disturbance of Equilibrium in Labyrinthine Diseases—VON STEIN (Moscow).

A few diseases of certain parts of the labyrinth are accompanied by disturbances of equilibrium, of walking and of jumping. The labyrinthine walk is characterized by a deviation from the median line, to the right or left, the labyrinthine jump consists in several jumps, gradually growing smaller until time is marked, then several jumps now and again marking time, etc. Besides these there is the staggering gait and spasmodic walk. Diseases of the labyrinth are most often manifested in the movement of the eyes. To-day in order to make a thoroughly scientific diagnosis, the test of the hearing is not sufficient; the centrifugal apparatus permits us to make even the differential diagnosis between diseases of the labyrinth and those of the spinal cord.

Mastoiditis in the Child—MÉNIÈRE (Paris).

The author has observed mastoiditis in children but 8 times in 1,103 cases, and 33 times in 438 cases in adults, as a consequence of acute purulent otitis. As a complication of an old otorrhea it is more frequent, 356 times in 1,748 cases. It is very slightly painful, which is explained by the fact that the apophysis is made up of cancellated tissue very easily resorbed.

Caries may invade the cells from without inwardly, without any lesion of the tympanum, but the opposite process is frequent. Necrosis frequently follows caries in the child, and the sequestra, once formed, separate themselves easily. Finally, abscesses extra and intra dura mater, thrombosis of the frontal sinus are complications which are rarely observed in the child.

Session of Wednesday, August 8—Evening.

M. SCHWENDT, of Basel, detailed *two cases* which confirmed the opinion of Bezold that the octave la^3 , la^4 is necessary for the perception of the majority of the vowels and consonants, and, consequently, of words.

1. A young girl, who became deaf-mute in consequence of meningitis, is completely deaf on the right side, but retains a considerable auditory remains on the left side; the upper limit of her auditory field varies according to her daily condition from sol^4 , si^b4 , and la^4 ; her duration of perception for the low octaves is quite considerable. She hears conversation with her good ear at nearly one metre's distance, vowels and consonants with the exception of *s*, and, what is somewhat unusual the lingual *r* (ærial perception.)

She hears a drum at a pretty far distance, and the cooing of doves, but does not hear swallows, nor Galton's whistle, Koenig's diapasons ut^7 to fa^9 , which give very intense sounds. She plays the piano fairly well and she classifies sounds in an original manner as *nice sounds and sounds which are not nice*. The *sounds which are not nice* represent the noise of the hammer she hears, whilst the *nice sounds* represent the octaves below la^4 which produce a musical impression.

2. A little boy has an auditory field limited to the low octaves, the upper limit being a little above la^3 ; he hears no vowel, but he perceives the lingual *r*.

On a Rare Termination of Mastoid Empyema—M. POLI (Geneva).

The author reports two cases of mastoiditis which terminated in a fistula which, starting at the external cortical portions, terminated at the sinus.

Otitic Thrombosis of the Transverse Sinus Without Pyemic Symptoms—M. POLI (Geneva).

The author recently saw the development, in a young man of twenty, of a thrombosis of the lateral sinus without other symptoms than an otomastoiditis, without pyemic phenomena. However, an operation on the mastoid not having given results and having, on the contrary, been followed by a bilateral papillitis, a craniotomy was performed without result; the patient died a few days later, and on necropsy a basilar meningitis was found and, in the lateral sinus, a thrombus of whitish color, lying from the jugular to within two centimetres of the torcular herophili.

Indications for and Results in Forty Radical Operations in Chronic Purulent Otitis Media—M. POLI (Geneva).

In eight cases the presence of a cholesteatoma led to operation; in two others, a caries with facial paralysis, an otomastoiditis, and mastoid fistulas in other cases. On other occasions it was the persistence of spontaneous or consecutive pains, the existence of vertigos, or the failure of conservative treatment which decided the author to operate. The treatment following the operation varied, on an average, from four or five months to a year.

The results in forty cases were as follows: Thirty-two cured cases of otorrhea; some relapses of cholesteatoma, which were mastered by a permanent opening behind the ear; the cure of two cases of facial paralysis; three cases of otorrhea which persisted; one case of infection of the other ear; one case of operative facial paralysis.

From a functional point of view, the author had almost always a remarkable improvement in hearing in the cured cases.

G. GELLÉ, SR., showed enlarged drawings of *phonograph tracings*, by which he demonstrated how the vibrations of sounds, vowels, consonants, syllables, etc., are inscribed. One may see in drawings of this sort the tracings of the changes produced in speech by lesions of the tongue, of the velum, etc. There is in the phonograph, as a matter of fact, a method of studying the voice and the shades of the voice.

Hearing Through Means of the Skull in Diseases of the Nervous System (Neuroses, Psychoses)—G. GELLÉ, JR.

The author believes that, in certain forms of insanity one may, outside of all pathological aural state, make the following conclusions:

The tuning-fork at the vertex is not perceived as well as normally and only for about one-third of the normal time-limit.

The same examination may be repeated several times consecutively, and, if the results thus obtained be compared, they may be divided into two groups. In the first group the duration of cranial perception of the tuning fork follows a descending progression, diminishing at each successive examination, this being the most frequent type in neurasthenia and hysteria. On the other hand, in the second group, this duration goes on increasing in successive examinations, this being what is found in melancholics, the persecuted and the debile.

M. Gellé proposes an explanation for these facts; he thinks that this difference lies in this: That, in the former, the attention is rapidly fatigued and exhausts itself, whilst, in the latter, the successive examinations shake the brain torpor and awaken the attention and fix it.

Cocainisation of the Semi-Circular Canals—M. J. C. KOENIG (Paris).

The author draws attention to the experiments he made in 1896 and 1897 on the semi-circular canals of the pigeon and detailed in his thesis (Paris, 1897). His experiments were made with crystals of muriate of cocaine, which, introduced directly in the perilymph, anesthetized the neuro-epithelial terminations of the vestibular nerve and thus produced an abolition of function pure and simple. The symptoms of Flourens appeared such as they are obtained by section of the canals. These experiments have been repeated and confirmed by Dr. Brener, of Vienna, and offer a conclusive proof of the static function of the semi-circular canals.

Session of Thursday, August 9—Morning.

Toxic Deafness—M. CASTEX (Paris).

It often happens that subjects, with or without otopathic antecedents, are affected by progressive deafness with entotic noises; sometimes even with vertigos and other troubles, and, if these patients employed various remedies or toxic ones, they are under the influence of ototoxia.

Among these noxious agents may be included the salts of quinine, the salicylates, chloroform and ether; then come mercury, phosphorus, alcohol, tobacco, hasheesh, the vermifuge chenopodium (Gellé, North), oxide of carbon, sulphide of carbon and lead. If autopsies are not forthcoming to definitely show the anatomo-pathological lesions of the ears in these cases, there are the experiments of Gellé and Laborde, who, causing large doses of quinine to be absorbed, determined in animals exudations of blood in the internal ear and meningo-cerebral congestions. These forms of deafness are therefore principally due to lesions of the internal ear, rarely of the auditory centers or of the middle ear.

This toxic deafness must be distinguished from infectious deafness (mumps, scarlatina, uremia, etc.), from purely nervous deafness and from the deafness which complicates hysteria. In toxic deafness the prognosis is grave and treatment does little good. This latter should be principally prophylactic, avoiding the use of noxious medicines.

Diabetic Mastoiditis—LANNOIS (Lyons).

The author details the case of an old man of sixty-nine years, diabetic since eight years, with ninety-eight grammes of sugar to the litre and three litres of urine daily, who contracted a grippal mastoiditis. Intervention was made, because the urine did not contain any acetone and only a half gramme of ammonia to the litre. The operation succeeded, and the wound was cicatrized, when, two months later, the patient succumbed to coma. In connection with this, M. Lannois recalled other cases and insisted upon the necessity of employing Gerhard's reaction and finding the percentage of ammonia. According to Maunyn, coma is imminent, above four grammes; it is better not to operate in such cases.

Trephining in Otic Intra-Cranial Complications—M. TAPTAS (Constantinople).

Prompted by two cases, the one regarding an otorrhea which was treated and seemed cured, of which its subject had, in reality, a large perisinus abscess, the other in which the very slight convexity of the tympanic membrane was the only auricular sign, and in which the apophysis was full of pus. M. Taptas does not hesitate to counsel an operation every time that an indication for it is only probable. An exploratory trephining may be permitted on the same grounds, and better than a laparotomy.

M. HERZFELD presented an *automatic myringotome*, which seems to have a practical application.

M. BOSIS, of Milan, presented a *lamp to illuminate the antrum*.

M. GEORGE MAHN of Paris, presented a *dilating speculum* for the extemporaneous examination of the ear in cases of accidental stenosis of the meatus which is commonly observed in different diseases, such as otorrhea, furunculosis, eczema and diffuse inflammations of the external ear.

Instruments—M. COURTADE.

Cylindrical speculum for cases of furuncle or abscess of the external auditory meatus.

Retainer for Ear Speculum. A steel spring which is placed around the head like the spring of Clar's mirror.

Canula for Irrigations of the Middle Ear. The canula which was presented was rectilinear and still furnished one or several vertical jets.

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SELECTED ABSTRACTS.

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with the collaboration of the

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I. NOSE AND NASO-PHARYNX.

Pseudo-Nasal Discharges—O. L. SMITH—*Clinique*, April, 1901.

Two cases are recited illustrating the clinical fact that nasal manifestations are often due to affections remotely situated. One must keep in mind that a deranged kidney, a weak heart or a sluggish liver will determine catarrhal secretions from nasal and pharyngeal mucous membranes wholly devoid of local disease. STEIN.

Erosions and Ulcerations of the Triangular Cartilage of the Septum—J. E. SCHADLE—*St. Paul Med. Journ.*, April, 1901.

The author first employs alkaline washes and the oxide of zinc or the yellow oxide of mercury ointment or unguentine. If necessary twenty per cent solution of silver nitrate or balsam peru may be applied. In some cases it is necessary to employ lunar caustic or even the galvano-cautery. STEIN.

The Use and Abuse of the Galvano Cautery in Nasal Surgery—C.

D. CONKEY—*The Medical Age*, March, 1901.

The author says it should rarely be used in the nose above the lower turbinated bone, on account of the possible danger of setting up inflammatory changes in the brain.

To be of any value at all the cauterization must be extensive. The cautery is far inferior to the snare in removing polypoid degenerative changes found on the anterior or posterior ends of the turbinal. The septum can seldom be benefitted by extensive cautery applications. Those cases covered with markedly hypertrophied tissue or greatly dilated blood vessels may receive the application of a fine linear incision.

The post-nasal space, as well the soft palate and uvula, are places where the cautery is best not used. Great care should be exercised in its use about the base of the tongue or larynx on account of the danger of producing adhesions.

In its employment on the turbinal the aim should be to do, as near as possible, a submucous operation. This is done by thrusting deeply into the anterior end of the turbinate, a real fine cautery point, moving the handle upward and downward. STEIN.

II. MOUTH AND PHARYNX.

A Case of Superimposed Uvula—T. A. DEBLOIS—*N. Y. Med. Journ.*, December 22, 1900.

This peculiarity occurred in a young man who complained of an irritation in the throat. On examination two uvulae were seen, one hanging from the anterior pillar and another from the posterior pillar, almost masked by the anterior uvula.

The posterior uvula was removed with the galvano-cautery snare, and the other uvula fell into position. The tissue removed was muscular in consistence.

M. D. LEDERMAN.

Supplementary Report on a Recurrent Tonsillar Tumor—R. P. LINCOLN—*N. Y. Med. Journ.*, October 7, 1900.

This recurrence occurred in a man in excellent physical condition, which at first resembled "Tertiary Ulceration Simulating Sarcoma of the Tonsil," and was reported under that title.

The new growth was removed under ether and suprarenal extract without the loss of much blood.

Portions of the growth were examined by different microscopists who differed in their opinions, though no malignancy was found by any of the observers. It was said to be a simple hyperplastic inflammatory product.

M. D. LEDERMAN.

Contribution to the Causation of Subacute Pharyngeal Tuberculosis in Infancy—C. COMBA—*Lo Sperimentale*, Anno liv, Fascicolo 3.

In the pharynx tuberculosis, while showing a preference for the combination of lymphatic glands, known under the name of the Ring of Waldeyer, particularly chooses the palatine tonsil. At one time it was thought that tuberculosis of the tonsils was rather rare, but on the contrary, it is frequently located in the lymphatic apparatus of the pharynx, but only in a latent condition and without giving any symptom of its presence. Pharyngeal tuberculosis is rather rare in children who are more subject to the secondary form. This is explained by the fact that before the age of seven or eight children do not expectorate but swallow their sputum, so that the tonsils do not remain in contact with the bronchial secretions or only for a short time. The pharynx may also be secondarily infected through the blood vessels (in the course of miliary tuberculosis) or in a retrograde sense by the lymphatics (in the peri-bronchial end cervico-lymphadenitis of tubercular nature).

Tuberculosis does not always remain localized and latent in the tonsils. We see it sometimes rapidly invading the pharynx, the soft palate, the fauces and the tongue. Of this acute form of pharyngitis the author has collected fourteen cases in literature and adds three others observed in the children's clinique in Florence. In these three cases the post-mortem demonstrated that the pharyngeal tuberculosis was secondary to pre-existing processes in the respiratory apparatus and the digestive tubes.

G. FERRERI. (Translated by StClair Thomson.)

III. ACCESSORY SINUSES.

Some Observations Upon the Diagnosis and Treatment of Chronic Maxillary Empyema—JOHN R. WINSLOW (Baltimore)—*Journ. Eye, Ear and Throat Dis.*, Jan.-Feb., 1901.

Winslow claims "proof-puncture" to be the only absolutely diagnostic procedure and points out the latest and most approved methods of performing it, and warns that a vertical or horizontal septum, or both, may divide the antrum into compartments that cannot be entered from the inferior nor the middle meatus, nor the alveolus alone.

Treatment, in his opinion, should always begin with simple intranasal measures, unless there are positive evidences of diseased teeth or other complications. Of all the endo-nasal procedures, he holds that the simplest and most effective is that devised by Dr. Walter J. Freeman, of Philadelphia. (*Journ. Amer. Med. Assn.*, 1895.)

Its principal competitor, the Krause method, is very painful, despite cocaine, and as there is no permanent drainage tube the trocar must be reintroduced every second day, each time causing considerable pain.

The author concludes by emphasizing the following points:

1. Antral empyema is not only not always, but is not generally, due to dental disease, the contrary view being based upon clinical rather than anatomical observation.

2. Its frequency and the necessity for systematic examination by multiple proof-puncture in suspected cases; thus, latent empyema would not be allowed to exist until it makes itself manifest by dental caries, and the apparent causal relation between the two would become much less frequent.

3. Unless evidently of dental origin, antral empyema should be treated through the nose, until it is certain that complications exist, when we should investigate through a large opening in the facial wall.

4. The alveolar opening should be reserved for those cases of undoubted dental origin, and those who refuse the radical operation. Even then we should treat the case ourselves, for the idea of the dental origin being firmly fixed in the minds of most dentists, they take no account of the nasal conditions. A number of cases are given.

EATON.

IV. LARYNX AND TRACHEA.

The Radical Treatment of Malignant Disease of the Larynx—

E. WAGGETT (London)—*N. Z. Med. Journ.*, March 9, 1901.

The author answers Dr. John Mackenzie's statement that "early total extirpation of the entire larynx, with its tributary lymphatics and glands, whether the latter are apparently diseased or not, is the only possible safeguard against local recurrence or metastasis. By no other method can we give the patient a reasonable assurance of a permanent lease on life."

The author states that statistics by well-known surgeons and skillful operators prove that the operation of thyrotomy in its new method of technique, show remarkable results.

Semon's death rate after thyrotomy from 1888 to 1897, including the early cases, amounts to 6.66 per cent. Out of fifteen patients, one died from the operation, and he was a chronic bronchitic, and seventy-two years of age.

The author concludes with the statement that thyrotomy as now practiced, with an early diagnosis, "is doing admirable work, and cannot be repressed in favor of an operation (total extirpation etc.), which has yet to win our confidence, and which at best, can offer the patient an insecure lease of life purchased at a terribly heavy premium."

M. D. LEDERMAN.

Laryngectomy Under Eucaine Anesthesia, with Remarks on the Technique of the Operation—G. G. DAVIS (Philadelphia)—

Annals of Surgery, June 9, 1901.

In an interesting and lucid paper upon the subject, the author details the various steps of this delicate operation. In the case reported, the removal of the larynx was performed for a carcinoma of this organ.

The patient survived the operation five days and died from streptococcus infection. A resumé of the operation is given, with the remarks of other observers. In the case reported, seventy-five minims of a one per cent solution of eucaine were used.

The author believes that it is feasible to remove the larynx under eucaine anesthesia. If both operations (tracheotomy and laryngectomy) are done simultaneously, and a favorable course is pursued the result will be brilliant, the patient being "out of bed on the fourth day."

The author believes that a preliminary tracheotomy ought to be done—safety should not be sacrificed to brilliancy.

M. D. LEDERMAN.

V. DYPHTHERIA, THYROID GLAND, ESOPHAGUS, ETC.

Carcinoma of the Thyroid Gland—A. E. HALSTEAD (Chicago)— *Western Med. Rev.*, February 15, 1901.

An extensive and rather exhaustive paper. The frequency of primary carcinoma varies greatly in different localities. It is stated to be frequent in all goitrous districts, but in Germany among 548 carcinomas, the thyroid was only so affected in 0.73 per cent.

As to the etiology, it is well known that the disease appears mostly in thyroids that have been the seat of benign struma. Pregnancy is considered by Kaufmann a predisposing cause. Age seems to have little influence. Cornil, Cramer and von Eiselberg report cases showing a traumatic origin of the disease.

The type of carcinoma commonly found in the thyroid is the soft medullary form; pavement celled epithelioma have been described by Förster and others. It is only in exceptional cases that the tumor involves the whole gland. Cases have been reported in which the thyroid tumor was insignificant in size and was not recognized until microscopic examination of the metastatic growths pointed to the thyroid as the seat of the primary tumor.

An important form of métastasis of the disease is the bone metastasis.

The frequency of metastases is shown by the cases reviewed by Hinterstossier. In fifty cases secondary tumors occurred in the lungs in twenty-nine, and ten in the bones. The bone metastases occur most frequently in the sternum.

The most important feature is the diagnosis of cancer of the thyroid. The extremely high mortality is in a large measure dependent upon the failure to make a diagnosis early enough to allow of successful surgical treatment.

The treatment in all cases seen before metastasis has taken place is complete thyroidectomy. Solitary bone metastasis does not contraindicate an operation, but if secondary deposits in the lungs or other internal organs are found, they absolutely contraindicate anything but palliative treatment.

The results of operative treatment are so far not encouraging; of fifty cases reported by Kuster only one was known to be well after four years. In the cases not operated upon, death results in most instances within one and one half years, either from suffocation, hemorrhage, thrombosis or cachexia. A full bibliography is appended.

EATON.

VI. EAR.

Tuberculosis of the Middle Ear—SEYMOUR OPPENHEIMER (New York)—*The Medical Age*, June 25, 1900.

Primary tuberculosis of the middle ear is of doubtful occurrence, but secondary involvement is not uncommon. The infection reaches the cavity by way of the Eustachian tube, the blood and lymphatic vessels, and the external auditory canal. The Eustachian route is much the most frequent, the infection arising from an infected pharynx. It is most frequent in childhood, but may occur at any age.

Gradually the disease extends and extensive destruction follows. The symptoms vary with the progress of the disease. The first indication is a sudden appearance of pus. A small circular perforation, or perhaps two perforations with thick, everted edges will be found. The membrane is bluish-white, glossy and edematous. The specific bacilli may be found in the pus and microscopical examination of the diseased tissue may yield much information. The prognosis is unfavorable in all cases. Neither surgical nor local medical treatment offers much encouragement. General anti-tubercular treatment is of value.

D. W. DETWILER.

The Present State of Otology in Great Britain—GRUNERT—*Lancet*, December 22, 1900.

The author expresses the opinion that those who are in the habit of systematically reading English literature are often astonished at the apparently almost complete ignorance of all foreign writings. This fact may be due to the ignorance of foreign languages so often noticeable in English surgeons, and perhaps also to their large private practice, which prevents their studying German scientific writings. So it has come to pass that Toynbee's countrymen have neglected to gather the fruits of the seed he had sown, and so the leadership of scientific progress in otology has passed into the hands of other nations. To Zaufal, of Prague, we are indebted for recommending as long ago as 1880 the opening and ligaturing of the internal jugular for sinus thrombosis, although this was not referred to by Horsley when he suggested the same operative treatment in 1886. In MacEwen's book, published in 1898, he considers much as new which had long been known. The paper of Ballance on "Skin-grafting After the Mastoid Operation"* is taken as another example to illustrate the British want of familiarity with current literature. Except for some unimportant details, the description of the mastoid operation as given by Ballance does not differ from the operation that has been in vogue in Germany for the last ten years. Skin-grafting the wound was recommended by Siebenmann as early as 1893.

ST. CLAIR THOMSON.

* *Medico-Chirurg. Trans.*, 1900.

BOOK REVIEWS.

Diseases of the Nose and Throat. By D. BRADEN KYLE, M.D., Clinical Professor of Laryngology and Rhinology, Jefferson Medical College, Philadelphia; Consulting Laryngologist, Rhinologist and Otologist, St. Agnes' Hospital. Second Edition, Revised. Octavo, 646 pages; over 150 illustrations and 6 lithographic plates. Philadelphia and London: W. B. Saunders & Co., 1901. Cloth, \$4.00 net.

A second edition of this work became necessary by the exhaustion of the first edition, which appeared in September, 1899, and not because of the latter's scientific insufficiency. The author, in his preface, confesses that "the second edition naturally cannot differ greatly in text from the first, as very little revision would be necessary in so short a time. THE LARYNGOSCOPE, having previously testified its appreciation of Dr. Kyle's concise and clear exposition of modern rhino-laryngology its further opinion would be a work of supererogation, inasmuch as this second edition differs from the first scientifically only in immaterial points. While referring our readers to our former critique it is not inappropriate that we should declare our gratification at the appearance of a second edition as evidence that one of the very best of all the English treatises on the nose and throat has met with that response from the profession which it so signally deserves.

F. C. E.

The American Year-Book of Medicine and Surgery. Edited by GEORGE M. GOULD, M.D., and Others. Cloth, 610 pages. Price, \$3.00. Messrs. W. B. Saunders & Co., 925 Walnut street, Philadelphia, Pa.

The volume on surgery of the American Year-Book of Medicine and Surgery for 1901 contains a very comprehensive chapter on the progress of rhinology and laryngology by Drs. E. F. Ingals and H. G. Ohls. The authors seem to have gathered the cream of progress and should be complimented on the concise presentation of this chapter.

We offer the same comment concerning the chapter on otology as was presented in the Year-Book of 1900. We fail to note a single reference to the many original papers on otology published in THE LARYNGOSCOPE, and as some of these count very materially in recent otologic progress some consideration should have been given the authors of these papers.

In the chapter on diseases of the respiratory organs is included an abstract of a method for determining the position of and for removing a foreign body in the air passages as reported by Dr. A. C. Coolidge, Jr.

Several paragraphs on anesthetics for local and general use as applied to operations about the nose and throat may also be of interest and are contained in the chapter on anesthetics.

M. A. G.

Stereoscopischer Medicinischer Atlas, Section on Otology. Edited by DR. O. BRIEGER, Breslau. First series, Diseases of the Ossicles, 5 M. Johann Ambrosius Barth, Leipzig.

Much stress has been laid of late on the value of stereoscopic pictures in the study of pathological conditions, especially in lesions of the osseous structures of the ear, where the actual specimens are infrequent and obtainable with difficulty. The excellent group of photographic reproductions comprising the first section of this valuable otologic collection has just appeared in a series of twelve plates illustrative of diseases of the ossicles.

These plates are unusually well defined, and when seen through the stereoscope present every pathological detail of the specimen accurately. Every descriptive text constitutes a folder enclosed about each individual plate. This is the first opportunity as yet afforded the otological profession for obtaining such a valuable collection at a very moderate price.

We most heartily recommend this series to every worker in otologic pathology. M. A. G.

The Transactions of the American Laryngological, Rhinological and Otological Society. Seventh annual meeting held in Philadelphia, Pa., May 31, June 1 and 2, 1900. Cloth, 158 pages. Published by the Society. DR. WENDELL C. PHILLIPS, Secretary, New York.

The transactions of the seventh annual meeting of the American Laryngological, Rhinological and Otological Society have just been received. As the majority of the papers presented at this meeting have appeared in full in THE LARYNGOSCOPE, no further review need be presented. M. A. G.

Atlas der Krankheiten der Nase, ihrer Nebenhöhlen und des Nasenrachenraumes. By DR. P. H. GERBER, of Königsberg. Issued in 6-7 parts, each containing 5-6 lithographic plates, with descriptive text. Price per part, 6 marks (\$1.50). Published by S. Karger, Karlstrasse 15, Berlin, Germany, 1901.

The first and second parts of this extensive atlas have just been issued and present a fair index of the scope of the work. A special feature is made of the grouping of clinical pictures in plates where the pathological conditions are closely related.

This series promises to be a very complete one and to especially include the various phases of common affections.

The lithographs are somewhat high-colored, but very clear. The accompanying text is succinct and in numerous instances illustrated liberally by simple diagrams. M. A. G.

Golden Rules of Aural and Nasal Practice. By PHILIP R. W. DE SANTI, F. R. C. S., Senior Surgeon to Out Patients, Aural Surgeon and Lecturer on Minor and Aural Surgery of the Westminster Hospital. 87 pages, cloth. Price, one shilling. Messrs. John Wright & Co., Bristol, and Messrs. Simpkins, Marshall, Hamilton, Kent & Co., London.

This is one of a popular vest-pocket series, having for its main object to emphasize to medical students the essential and practical points of everyday aural practice. The subject matter has been briefly and clearly stated and carefully selected.

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ST. LOUIS, MO., JUNE, 1901.

No. 6.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

SOME CRITICAL AND DESULTORY REMARKS ON RECENT LARYNGOLOGICAL AND RHINOLOGICAL LITERATURE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Thirteenth Paper, Second Series.)

In some remarks on the operation of frontal sinusitis by Suarez de Mendoza¹ there is a record of a very rare anomaly of these cavities, it having been noted only once before according to the author. The condition was one in which there were two frontal sinuses on each side, one behind the other, and each communicating by a separate infundibulum with the nose. There was a very small communication between these cavities. It may be left to the anatomists to decide as to the posterior cavities being properly frontal sinuses, but from the rather confusing description and the drawings the suspicion arises that these latter were really abnormally developed ethmoidal cells extending into the frontal bone. However that may be, the question arises, and it is a very practical one, whether these abnormal conditions of the accessory sinuses do not render the patients much more liable to chronic inflammation of their mucosæ. If so the surgeon is more apt to encounter them than their anatomical rarity would lead him at first blush to expect. This possibly greater liability of the abnormality of bony landmarks in cases coming for operation is a matter of the greatest importance in a region where the operator is in such dangerous proximity to the base of the cranium. I have lately seen the frontal bone perforated and the dura-mater wounded with disastrous results in a case in which the frontal sinus was lacking on that side. The orbital abscess which was supposed to have its origin in a frontal sinus proved to be in

the anterior and posterior ethmoidal cells. As a part of the responsibility of this case is my own, the question to me seems a particularly practical one. A very useful thesis would be an account of how far abnormalities or deformities of anatomical structure enter into the etiology of accessory sinus disease as a predisposing factor. In the same journal of a later date² Furet reports a case of sphenoidal sinus disease in which access was gained to the anterior wall by the resection of the inner wall of the antrum of Highmore and the turbinated bones. Unfortunately the author in his report of the case does not sufficiently detail the symptoms for which this extensive operation was done. I must confess to a feeling of conservative hesitation when it comes to extensive destruction of the bony framework of the internal nose for symptoms which do not urgently threaten the life of the patient. For long continued and profuse suppuration in the bony cavities at the base of the brain, prompt, energetic and radical measures are often plainly indicated, but for the symptoms of nasal obstruction and catarrh I am not inclined to advocate the ruthless destruction of turbinated bones nor the extensive crushing of the bony septum. This I know is frequently done with impunity and the patient escapes with his life, but not always. The human head is not a melon, the internal structure of which may be removed with impunity. As we have already entered upon a campaign of intranasal evisceration, it is well we should keep sharply in mind the limitations within which such extensive laceration is justifiable. It is therefore unfortunate, I think, that the indications for interference should not be more thoroughly discussed *pari passu* with the technique.

Furet says briefly that he would reserve his operation for those cases in which the nasal route does not afford sufficient room and those in which there is also a suppuration of the antrum of Highmore, and where thorough and complete drainage is indispensable, as in cases with cerebral complications. This limits its application to a comparatively few cases. It is therefore to be presumed that the symptoms in his case were urgent. He had at first attempted to treat the sinus through the nasal fossa, but the removal of both middle turbinated bones did not give him sufficient room. After six months occupied in this treatment he opened the healthy maxillary sinus of one side by the supra-alveolar route, scraped away the internal wall into the nasal chambers, destroying the inferior turbinated bone. It will thus be seen that the middle turbinated having been previously removed, the operator had a wide field for operation at the base of the skull. This was done on the left side and the septum separating the two sphenoidal

sinuses being removed by curette and forceps he had access to both. After three weeks of tamponing and douching the patient was relieved of her symptoms, whatever they had been. This operation is, of course, not original with Furet, but has been practiced by Jansen and by Luc. Incidentally here and elsewhere (*Ibid.* No. 1, 1901) Furet refers to the frequency of the maxillary sinus acting simply as a pocket for the purulent discharges of the other sinuses, a most important matter, to which attention was drawn a number of years ago in this country by Dr. Bryan and myself. Turning from this operation to the discussion which lately took place in a session of the Laryngological Society of London³ one notes the same spirit of ruthless destruction of the internal anatomy of the nose. The same radical spirit was evidenced a few years ago in England in the employment of the "spoke shave" for the ablation of the inferior turbinated bone. This latter operation somewhat differently carried out is finding favor in Germany, Küttner having in a very recent issue of the *Berliner Klin. Wochenschrift* (No. 14, 1901) advocated it in cases of persistent and recurrent hyperplasia of the mucosa of the inferior turbinated bone. The discussion referred to was opened by Dr. Lambert Lack on the treatment of nasal polypi. The position was assumed frankly by some of the participants and tacitly by others that the presence of polypi in the nose *per se* means such disease of the bony structures of the ethmoid as to make the indication for their removal imperative. Some speakers assumed the still more untenable ground first advanced by Woakes that the disease giving rise to the edematous infiltration of the soft parts always begins in the bony structure. Now, however much we may be disposed to admit the very frequent involvement of the bone in the edematous protrusions of the mucosa of the middle turbinated, it would be seeking strange gods to accept the postulate that the primary insult is received by the deep lying bone. Hajek, and MacDonald before him, has clearly stated his belief that the process really begins in the mucosa and this point was brought out in the discussion by Thomson and others. It seems hardly worth while to dwell much upon it here, but, nevertheless, it is the practical salient point upon which the rationale of the proper treatment must rest. If we are to entertain the contrary view are we to presuppose some constitutional dyscrasia in these cases? Is it syphilis or tuberculosis in modern parlance? Or is it scrofula in the ancient tongue of past decades? Or is it bacterial infection? Or is it some process, as hinted by Cordes, similar to osteomalacia? None of these assumptions seem in accord with a rational pathology, nor do they coincide with

clinical observation. On the supposition of a primary bone disease how are we to explain the retrocession of nasal polypi after the pus is drained out of a suppurating antrum through an opening below? We cannot explain thus those rare cases in which polypi spring from other localities, as, for instance, from the nasal septum and the inferior turbinated body. In fact, bone disease has its site in the ethmoidal region, as a rule, because it is in that region especially, it is so near the surface and covered by such a thin layer of superimposed periosteum and mucosa. Destructive rarefying osteitis, without specific cause, is practically unknown elsewhere in the nose. There is one point in the histological diagnosis of this latter condition, to which attention has not been drawn, and that is the difficulty of saying on microscopic examination whether bone disease exists or not. Normally we have very thin lamellæ of bone in many places existing in the mucosa which clothes it on both sides, as separate islands of bony tissue, at the edges of which the osteoblasts and osteoclasts are constantly at work, apparently altering the bony archipelago; and like the coral insects, constantly throwing up new reefs and making new channels through others, a constant slow integration and disintegration of normal structure. Rarefying osteitis in this region might be defined as the disturbance of the normal relations between these two processes, the osteoclasts making inroads upon the mainland of the firmer bony structure and possibly the osteoblasts pushing islands of calcareous deposit farther out into the soft parts, altered as they are in their nutrition by chronic inflammation. Notwithstanding this conception it must have frequently been a puzzle to other observers as well as to myself in studying the histology of this subject to recognize the normal as distinct from the abnormal activities of the tissues. There is no sharp border line between health and disease, either as to biological processes or histological detail, an idea which will be found very carefully elaborated in Bland Sutton's popular book, "Evolution and Disease," first published some ten years ago.

Cordes (*Archiv für Laryngologie*, Heft 2, Band xi, 1900) has lately published a very exhaustive account of these bone changes. His conclusions for the most part corroborate the previous work of Hajek. He obtained much of his material by the resection of a part or of the whole of the middle turbinated bone. He insists very properly on the necessity of examining larger pieces of bone than are usually removed as spicules, which often come away with nasal polypi, in order to study the relationship of diseased conditions in the bone to those in the mucosa. Although agreeing with

Hajek, that the process usually begins in the mucosa, he leans somewhat to the idea of Woakes, that the disease may in some cases begin in the bone. I only again go over this ground, which I reviewed a year ago in connection with Cholewa's paper, because it has a vital bearing on the question under discussion. As I have more than once insisted, the causes of serous effusion in the mucosa are not simple, but various and complex. We are not warranted in disregarding vaso-motor influences having their origin in the central nervous system any more than in ignoring mechanical obstruction to the venous return by morbid processes in the mucosa and the subjacent bone. In the discussion at the London Laryngological Society, Lack referred to those cases of nasal polypi in which there was no apparent bone lesions as instances in which the osteitis had subsided and the soft parts had continued in an edematous condition. This I do not believe. The interpretation of this state of affairs, it seems to me, is that the inflammatory condition of the mucosa has not been transmitted through the periosteum to a sufficient degree to cause disintegration of the bony tissue by rarefying osteitis. It seems to me that the practical conclusions to be drawn from this view of the pathogenesis is that the operator should be sure that an irremediable bone lesion coexists before he proceeds to extirpate the larger part of the intranasal framework of the ethmoid bone. This can often be determined at once by the history, by the extent of the edematous process, the evidence of bare bone, etc. If not, the thorough removal of the soft parts should first be performed, and the indications for a more radical procedure be judged by the subsequent course of the disease. That bone disease frequently coexists with edematous conditions of the mucosa has been established beyond the peradventure of a doubt, but let us not, at least for this once, in the history of modern rhinology, rush to the untenable extreme of believing and acting on the belief that this is always the case.

In the report of a more recent meeting of the London Society (*Journ. of Laryngology*, April, 1901), there may be noted in the remarks of Sir Felix Semon the same query as to the cases in which these extensive operations are justifiable. After all is said, to prove that an operation is feasible is not to demonstrate its justifiability. As Semon remarked, few of these cases altogether come to grief. As post-mortem examination has abundantly shown, foci of suppuration in the accessory sinuses are very common and cerebral abscess therefrom a very great rarity. A large proportion of the cases of sinus suppuration as well as of nasal polypi must undergo spontaneous cure. Even the most sweeping destruction of the eth-

moldal structures not infrequently fails to suppress suppuration and serous infiltration of the mucosa.

As a critical review, therefore, of the tendencies in intranasal surgery leads us to a conservative frame of mind, I may refer briefly to a paper by Lermoyez and Mahu in the July number of the *Annales des Maladies de l'Oreille*, etc., for 1900, upon the employment of hot air in the treatment of acute and chronic engorgements of the nasal mucosa. Lichtwitz, in a more recent issue (April, 1901), makes another contribution to the subject. Heated air is driven by a very simple contrivance against the mucosa and it is claimed by these authors that its dehydrating and constricting effect on the tissues is very efficacious in reducing the vascularity, absorbing the serous effusion, and relieving the various symptoms depending upon these pathological conditions. Although the authors go so far as to urge its efficiency in chronic hyperplasia of the soft parts, it must be confessed it is a little difficult to understand how fibrous tissue, glandular ectasia and vascular dilatation of long standing could be removed by this method. Nevertheless, such a sequence is not absolutely unthinkable as are some of the claims of therapeutic enthusiasts who ask us to lay aside our reason and cling to faith alone. In acute inflammation this process, frequently repeated, we might expect to produce very favorable results, and possibly these applications long continued might so alter the nutrition of the parts as to cause a shrinking of the hyperplastic tissue. Nevertheless, we must keep in mind the physiological law of the reaction which must follow a measure such as this as it does the application of cocaine and of suprarenal extract. The application of dry heat to the skin has lately been very much in vogue and has met with favor in general medicine. Where the capillaries are more abundant and osmosis more free, as in the nasal mucosa, we are certainly warranted in expecting more impression might be made on the morbid activities of the tissues. It is to be hoped the method may be more widely tested.

A more formidable class of cases than those we have been considering is incidentally mentioned by Furet in the paper referred to above. While the operation he describes may be applicable to some of these, the more extensive operations of Partsch⁴ and of Loewe⁵ will probably be found much more efficacious. For extirpation of neoplasms at the base of the skull, in the nose or naso-pharynx, access to these regions is gained by Loewe by a procedure which consists in cutting through the whole length of the septum, beginning anteriorly under the lip, as in the Rouge operation, and through the internal and external walls of the maxillary sinus on each side.

The floor of the nose may, after this, the author declares, be forced down on to the tongue. The inferior and middle turbinated bones may be removed if necessary, so that a large free field of view and of access is gained from under the upper lip. The growths having been extirpated, the bony floor of the nose and antrum is raised into place. There is thus no ensuing deformity, and, according to the authors, hemorrhage is largely avoided or easily controlled. This procedure, at first glance, seems a formidable one, but, on further reflection, it will seem a more feasible and plausible undertaking. It will not be surprising if it is frequently practiced in the future.

All rhinologists are aware how strongly John N. McKenzie in this country, and Fliess abroad, have insisted upon the reflex connection between certain areas of erectile mucosa in the nose and the sexual apparatus both in men and women. Seiler's assertion that he was able to diagnosticate uterine conditions by laryngoscopic appearances is to be found in the fourth edition of his book on "Diseases of the Throat," but has not met with the same credence. Hobbs (*LARYNGOSCOPE*, March, 1897) claims to have cured two cases of chronic priapism by the insufflation of cocaine in the nose. Joal and many others have noted the occurrence of epistaxis at the time of puberty and from onanism. Vicarious menstruation is not an unfamiliar phenomenon in the nose. I have shown the marked difference in amount between the erectile tissue in the nasal mucosa of a bull and that of the castrated animal (*N. Z. Med. Journ.*, November 19, 1898).

Now, the chief one of these genital areas in the nose of the human race is the tuberculum septi, the middle of the posterior border of the nasal septum and that is almost the sole locality* in the nose of the herbivora which is supplied with erectile tissue. This being such a review of the subject as occurs to me without especial search of recent laryngological literature, we find a continuation and a marked confirmation of the observations of sexual reflex in connection with the nasal mucosa in the recent paper of Dr. Arthur Schiff.⁶ At first not disposed to accept the statements of Fliess and McKenzie as to this relationship he ended a series of investigations by being completely convinced. His observations were made on forty-seven cases carefully selected. There were among these thirty-four who,

* I draw my conclusions from the examination of the nasal mucosa of oxen and sheep. It is possible the assertion may also hold good for the carnivora, and it may be that in other of the ruminants it is not so. In the ox and sheep there is some vascular tissue along the floor of the nose close to the septum. In guinea pigs and rabbits I have not observed erectile tissue in the nose. The monkey, I would conclude from some sections kindly sent me some years ago by Dr. Shurly, has much the same development of the turbinated bodies as has his cousin man, but that locality is not supplied with any marked angiomatous development in the bovine race.

hysteria excluded, on cocainization of the genital areas in the nose, were relieved of their dysmenorrheal symptoms—not only once but regularly.

Here it may be well to insert a recent observation of Dr. Benno Lewy⁷, to which Fraenkel⁸ is perfectly right in calling attention as being a very important matter in nasal histology. Despite the very great attention which has been given clinically to the various nerve phenomena in the nose, singular to say, little or none has been given to the anatomical study of the terminal filaments of the intranasal nerves themselves. Practically it is an unexplored field. In studying in the aggregate a very large number of sections of the nasal mucosa with other problems in view, I have occasionally noted the presence of nerve filaments, but I have never studied nor stained them to differentiate them. From Dr. Lewy's paper it seems his attention was accidentally attracted by the reaction of a saffranin stain in specimens hardened in Flemming's solution.* The cases from which the specimens were taken were two women with uterine disorders and nervous nasal symptoms, which he believed depended on local changes in the mucosa rather than upon the distant genital irritation. His staining revealed pictures of abundant nerve filaments and nerve bundles amidst the erectile and glandular tissue of the inferior turbinated bodies. Never having had any experience with the normal histological appearances of the nerve distribution he was unable to draw any conclusions as to the pathogenic significance presented by the observations. From his illustrations and descriptions it would seem doubtful if the nerve structures were themselves diseased or abnormally abundant. The value of the paper, therefore, consists largely, if not solely, in the suggestion of this line of investigation as one likely to throw much light upon many reflex phenomena in nasal semeiology. Incidentally Lewy also notes the presence of fat globules in the diseased mucosa, another observation which has hitherto received no attention by writers in this field.

Wrapped up in so many ways with self-consciousness our knowledge of the *modus operandi* of reflex neuroses is largely theoretical. Their frequent manifestation in the organ of smell connects them there with another imperfectly understood physiological function. Reflex neuroses having their apparent origin in the naso-pharynx have not attracted the attention which has been devoted to nasal reflexes. Indeed they are much less common. I may here refer briefly to some notes I have of two such cases, the explosion of the reflex being of an epileptic nature.

* Since this paper went to the printer I have followed the technique indicated by Lewy in one case of a diseased edematous mucosa of the middle turbinated bone, and though I have, of course, been unable to arrive at any conclusion in the matter, I have been unable to distinguish any nerve fibers or any fat.

Case I.—A healthy-looking boy of six or seven, with a nervous mother, but in whose family there was not marked neurotic taint, came to one of my clinics with the history of having had some sort of fainting attack at school. He gave some slight signs of nasal obstruction. I introduced my index finger into his naso-pharynx and a small quantity of adenoids was touched—not scraped. About two minutes later the boy suddenly fell to the floor on his face and had a very slight convulsion. He recovered too quickly for me to note anything definite in regard to the convulsive movement. He was pale but not drowsy after the attack. His mother was advised to have his adenoids removed, but declined, and I did not again see the patient. This case is not, of course, a conclusive one of naso-pharyngeal reflex. More complete evidence is furnished by

Case II.—A fifteen-year-old boy with unilateral nasal stenosis from a septal deviation was brought to my office by his Swedish phlegmatic father, who said the mother was nervous, and that this boy did not want to go to school any more. The boy on being questioned said he did not want to study longer because he could not remember or fix his mind on his tasks. He had never fainted or had any fits. On examination with the finger a considerable amount of adenoids was discovered in the naso-pharynx. They were only gently palpated by the finger. Two or three minutes later the boy with a cry pitched forward on his face; there was a light tremor, but in less than a minute he recovered, arose, was a little morose and stupid, and said: "What did you do to me—give me a shock?"

This patient also refused operation and disappeared, under the impression apparently that I had used electricity on him and resenting it very much. It will be noted that this was a typical history of aprosexia, only one or two of which cases I have ever seen.

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A CONGENITAL DEFORMITY OF BOTH AURICLES.*

BY HENRY L. WAGNER, M.D., PH.D., SAN FRANCISCO.

A boy of German parentage, five years old, who was born prematurely by two months, shows an interesting congenital deformity of both auricles. The deformity, equally marked on both sides, consists in the absence of the inner part of the upper helix. The missing part of this cartilage can easily be traced and circumscribed by the touch



a. Incisura helix. b. First hidden cartilage. c. Second hidden cartilage.

of the fingers, lying, as it does, deeply hidden under the skin. We can notice further an "incisura helix," which is produced by a conjunction of the enlarged helix and a second hidden cartilage running parallel to the upper visible helix. The nature of the deformity is clearly shown in the accompanying photograph. Both hidden cartilaginous rudiments are connected by a small bridge apparently of the same structure.

* Presented at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otological Society, New York, May 23, 1901.

The anti-helix is very much over-developed and runs without forming any crura into an abnormally deep groove. The position of the anti-tragus to the tragus is also considerably altered, though other parts of the ear, such as the external meatus, the tympanum, etc., are normal, as is also the sense of hearing.



a. Incisura helicis. *b.* Hidden cartilage.

According to His, this deformity can be traced to an arrest of development between the second and third foetal month, when the auricles begin to grow away from the head and to take definite shape.

The boy's mental condition shows imperfect development and he is just now beginning to speak, conditions to which Gradenigo has called our attention in cases of deformed auricles.

AUSCULTATION OF THE MASTOID.*

BY ALBERT H. ANDREWS, M.D., CHICAGO.

The use of the tuning-fork and stethoscope as an aid in the diagnosis of conditions within the mastoid process, and in determining the relation of the mastoid to the cranial cavity, is, so far as I have been able to learn, a new method of examination. My experience in the examination of twenty-six diseased mastoids and of about two hundred apparently normal mastoids, together with the statements of a number of my confreres who have experimented with this method since my first publication on the subject, lead me to the belief that it will be found a valuable aid in the diagnosis and treatment of mastoid diseases.

The test for the density of the mastoid is made by placing a stethoscope with a small bell over the tip and placing the handle of a vibrating tuning-fork against the mastoid in the neighborhood of the antrum. It is found that when the mastoid cells are filled with pus or granulations, or when the density is increased from bone proliferation, the sound waves are transmitted to the ears of the examiner with greater intensity and for a longer time than when the stethoscope and tuning-fork are placed in the same relative position over the opposite or a normal mastoid.

In making the test no traction should be made upon the soft tissues, for if the skin is stretched or if it is pinched between the stethoscope and the handle of the fork the sound will be unduly increased.

The stethoscope I have used has flexible tubes and a metal bell five-eighths of an inch in diameter. The fork which has given the best results is the C², 512.

In the examination of the two hundred mastoids in which there was no history of disease the following results were obtained:

1. The length of time which I could hear the fork over apparently normal mastoids varied from fifteen to twenty-two seconds.

Considering the fact that there is much variation in the density of different normal mastoids, and also considerable variation in the amount of soft tissue covering the bone, it is not surprising that this range of duration should be noted.

* Read before the Western Ophthalmologic and Oto-Laryngologic Association, Cincinnati, April 11, 1901.

2. The average length of time the fork could be heard was about eighteen seconds.

3. The length of time the patient could hear the fork by bone conduction was, as a rule, slightly less than the time I could hear it with the stethoscope, *i. e.*, bone conduction was slightly less than auscultation.

It is not expected that other otologists will necessarily secure the same results in examining normal mastoids that I have. There are a number of conditions entirely independent of the mastoid itself that may influence the result.

1. If the conducting properties of the stethoscope are greater than the conducting properties of the one I have used the difference between bone conduction and auscultation will be increased, while if the conducting properties of the stethoscope should happen to be less than the conducting properties of my instrument the relation between bone conduction and auscultation may be reversed.

2. Tuning-forks vary greatly in the time they can be heard by the normal ear.

In order that the physician may compare the auscultation of a suspected mastoid with that of the average normal mastoid he should first make a sufficient number of examinations with a given fork and a given stethoscope to establish a standard for himself.

In operating upon the mastoid its anatomical relation to the cranial cavity becomes a matter of considerable importance. The upper border of the mastoid forms a part of the floor of the middle fossa, while the posterior border of the mastoid forms the wall of the cranial cavity adjacent to the lateral sinus. Many experiments have been made in the past in order to determine, if possible, some rule regarding the anatomical relation of these parts, but the best that has been accomplished thus far refers only to averages and general indications. By means of the stethoscope and tuning-fork the floor of the middle fossa can be located and the width of the mastoid, *i. e.*, the distance from the external auditory canal backward to the lateral sinus can be very accurately determined in each individual case. When it comes to operating, averages and general indications are of little value; it is definite information that is wanted. To locate the floor of the middle fossa the bell of the stethoscope is placed upon the lower part of the mastoid and the handle of the vibrating tuning-fork is moved downward over the squama. As soon as the upper border of the mastoid is reached a decided increase in the sound of the fork will be noted. The lateral sinus is located in the same manner, except that the stethoscope is crowded close to the attach-

ment of the auricle and the tuning-fork is carried from behind forward until the increase in sound is noted when the fork reaches the posterior border of the mastoid. In two recent operations the lateral sinus and the floor of the middle fossa, as indicated by this method of examination, were found to have been correctly determined.

The principles underlying this method of examination, and upon which the conclusions have been based, are:

1. The greater the density of the medium the greater will be its sound-conducting property.
2. The more nearly uniform the medium the greater will be its sound-conducting property.
3. Solid media of the same density transmit sound waves, within certain limitations, in proportion to their relative thickness.

A condensed report of a few cases will suffice to show the results which are obtained by auscultation:

Case I.—Mrs. S., colored, aged forty, gave a history of suppuration of the left ear for fifteen years, with occasional attacks of acute pain in the ear and side of the head. For three weeks before coming to the clinic she suffered continuously from a dull pain in the ear and mastoid, which sometimes extended over the side of the head as far forward as the eye. Examination showed complete loss of the membrana tensa. Deep pressure over the mastoid caused pain. In testing the comparative resonance of the two mastoids I found that when the bell of the stethoscope was placed on the tip of the mastoid with the handle of the tuning-fork over the antrum the resonance of the left side was much greater than that of the right. The time which I could hear the fork on the affected side was thirty seconds, and on the normal side was sixteen seconds.

A mastoid operation was done December 30. The usual post-auricular incision was made, and the mastoid cortex found to be of ordinary density. The air cells were small and filled with granulations.

Case II.—Mrs. L., aged twenty-nine, was brought to my office for examination by Dr. Joseph Beck, March 25. The history was that of acute suppurative otitis media of the left ear with beginning mastoid symptoms. The fork could be heard on the affected mastoid about twenty-five seconds. Two days later the same fork could be heard about thirty-five seconds. The symptoms continued to increase in severity and Dr. Beck operated March 29. He reports finding the mastoid cells filled with granulations and considerable pus in the antrum.

Case III.—P. N., aged four, when first seen had an ordinary acute left suppurative otitis media. The fork could be heard over

both mastoids eighteen seconds. After a few days mastoid symptoms developed and the time the fork could be heard over the affected side increased first to twenty-five seconds, later to thirty seconds. Then the mastoid symptoms began to disappear and the resonance of the mastoid gradually returned to normal.

Case IV.—Mr. S., aged forty-two, examined with Dr. W. O. Nance. The patient gave a history of right suppurative otitis media for three months. A superficial abscess had been opened behind the mastoid. Auscultation gave: Left ear eighteen seconds, right ear twenty-eight seconds. The case was operated upon by Dr. C. L. Ensley at the Illinois Charitable Eye and Ear Infirmary, who reports the mastoid cells completely filled with pus and granulations.

Case V.—A. C., aged five, with a history of chronic suppuration of the left ear for two years, following scarlet fever. Examination revealed a small mass of granulations in the posterior wall of the auditory canal just external to the attachment of the drum membrane. This mass proved to be the opening of a sinus leading back into the mastoid. Auscultation showed normal resonance on both sides—about eighteen seconds. In operating, the mastoid cells proper were found free from any indication of disease, but considerable dead bone was removed from about the antrum.

The above cases are cited, not to show that auscultation assisted in the diagnosis or that it aided in determining the necessity for operation in these individual cases, but to show that the results obtained by auscultation are a reliable index to conditions within the mastoid and to show that this method of examination can be made to give us valuable aid in the diagnosis of cases that would otherwise be obscure.

I have no thought that auscultation will take the place of any of the other methods of examination. In some of the cases the symptoms of mastoid disease are so well defined and the indication for operation so clear that no additional aid in diagnosis is necessary. In other cases the local symptoms do not seem to indicate sufficient disease of the mastoid to account for the general symptoms and constitutional disturbance. It is in these cases that the surgeon's responsibility is greatest. He knows that the welfare, and perhaps the life of the patient depends upon his proper management of the case. It is then that any method of examination which will give him additional evidence as to the conditions within the mastoid may become of inestimable value.

THE IMPORTANCE OF PREVENTING CHRONIC SUPPURATING ETHMOIDITIS BY PROMPT LOCAL TREATMENT.*

BY CLARENCE C. RICE, M.D., NEW YORK.

Chronic suppurating ethmoiditis is a condition serious enough to destroy success, happiness, comfort and even the life itself of its unfortunate possessor.

The judicious treatment of this disease is more troublesome to the rhinologist than is that of almost any other of the many nasal affections. The responsibility involved in the cure of this class of patients is particularly great because of the hope constantly entertained by both patient and physician that since the disease is possibly curable, the remedy must be found to control it. These patients wander about from one nasal surgeon to another with a desire for nothing else than relief, and submit to operation after operation. In some cases the middle turbinated bone has been partly taken away; in others it has been entirely removed, but the flow of pus, the pains in the head and the nasal obstruction are still present, and the mental condition of the patient is deplorable. The third or fourth nasal surgeon, who with his probe finds uncovered bone, when almost the entire middle turbinated has been removed, is in doubt as to what course of treatment is left for him to pursue. He fears that the removal of more bone will leave a surface which can never be covered by soft tissue, and that it will be most difficult to stop the purulent discharge. The patient in this late stage of suppurating ethmoiditis, with this uneven discharge of pus, the headache and mental depression, suffers greater discomfort than in the earlier stages when the annoyance is not much greater than that usually accompanying a severe coryza. It cannot be too strongly asserted that there are few conditions more difficult to endure than that of a persistent suppurating ethmoiditis after the middle turbinated has been partly or wholly destroyed.

Nothing should appeal more strongly to the rhinologist than the importance both of preventing and eradicating at the earliest possible moment, those conditions which are competent to convert a subacute inflammation involving the middle turbinated region into a chronic process. Again, it is the duty of the rhinologist to use at all times in his daily practice the best judgment in the treatment of

* Read before the Laryngological Section, New York Academy of Medicine, April 24, 1901.

all nasal conditions so that no infectious influences may be exerted in the nostrils following any surgical or therapeutic procedure, which may result in a suppurating condition of the ethmoidal cells.

In order to explain more definitely the purpose of this paper, we would say that we believe in the first place it is possible to produce a chronic suppurating ethmoiditis, and that this condition has frequently been caused by ill-advised nasal operations, or by operative work improperly performed, and even by simple medicinal treatment of the nasal passages, which has been of too irritating a character.

Our second proposition (and this perhaps should have been stated first) is that there are certain nasal pathological conditions, some of them commencing in early life, which furnish the predisposing influences to a suppurating ethmoiditis, and that the presence of these should be promptly appreciated and judiciously controlled.

But what are the nasal conditions which if left uncured furnish the predisposing soil to an acute and later to a chronic suppurating ethmoiditis?

In a general way we may say that anything that produces congestion and inflammation of the middle turbinated region, which produces tissue thickening primarily, and eventually enlargement of the entire structure of the middle turbinated is competent to furnish such predisposition. It is more difficult perhaps to preserve the normal integrity of the middle turbinated bone than of any other single structure of the nose. It shares in the universal congestion of an hypertrophic catarrhal process—constantly undergoing changes which may involve the ethmoidal cells themselves—while in an atrophic condition the middle turbinated alone, in opposition to the kind of change going on about it, becomes so enlarged as to reach and frequently to push the septum away from the median line. Why the middle turbinated alone should become enlarged, with a condition of shrinkage all about it, is difficult to accurately state, and we will not enter into the reasons at this time. It serves the purpose of this paper to say that the middle turbinated region, and hence the ethmoidal cells, are more prone to pathological changes than any other part of the nose, and therefore require closer observation and more judicious care.

Before this section of specialists it is not necessary to mention either the nasal conditions which predispose to ethmoidal disease or to indicate their treatment, but only to say that the family physician should be warned of the danger of the production of suppurating affections of the sinuses from neglected or badly treated nasal dis-

eases. Mouth-breathing children with nasal passages filled with muco-purulent secretions, and the posterior pharynx blocked with lymphoid tissue are receiving more attention than formerly, but the neglected ones are still common enough. This condition is a fruitful source of ethmoidal suppuration.

Ill-advised nasal washings and applications after adenoids have been removed, frequently increase rather than allay the congestion and irritation; and the nasal passages, overwashed with improper solutions, are never allowed to recover their normal condition, and the middle turbinated region undergoes *permanent* pathological change, and some extra source of infection finally involves the ethmoidal cells. How much good could be accomplished if the interminable nasal washings could cease for a short time only, and the irritated mucous membrane be allowed to recover itself under protection of a sedative, cleanly powder.

We would suggest, too, that infinite harm is constantly done by the over-use of sprays and washes in the first days of acute coryza, and that colds of short duration are often changed into purulent catarrhs by irritating local treatment. If it is true that too much can be done in such cases, it is equally true that too little attention is paid to the purulent catarrhs of children which, when neglected leave the anterior nasal tissues atrophied, dry and granular, and so remove all natural protection from the middle turbinated region; and this passes into the stages of congestion and hypertrophy. The normal relation between the middle turbinated covering and the ethmoidal cells becomes disturbed, and a catarrhal and oftentimes a suppurating process is started within the cells themselves. We have long felt that the pathological changes in the middle turbinated bone (which is so readily affected by adverse influences) could be controlled in a way to prevent the ill effects of the abnormal pressure which the enlarged bone when wedged against the septum exerts upon the cells behind it. We can follow step by step the ordinary pathological changes of a catarrhal process, which takes place in all the tissues from the mucous covering to the turbinated bone itself; but who can determine what effect upon the ethmoidal cells is exerted by so simple a factor as the increased or decreased pressure caused by a middle turbinated bone which daily changes in its volume and density? Such variable pressure must keep the ethmoidal region constantly in a condition akin to inflammation. Enlargement of the middle turbinated may also at any time close the ethmoidal openings and so create serious disturbance.

While meddlesome attacks upon the middle turbinated bone are

strongly to be deprecated, we think it often judicious to cut away so much of it as will prevent pressure on itself by contact with the septum. There certainly should always be a ventilating space between these tissues. Cessation of this pressure will frequently prevent further enlargement of the middle turbinated and greatly lessen the frequency of *ethmoidal* disease.

We cannot speak too strongly of the negligence of the person who does not consult a specialist until the nostrils become filled with polypi, for no condition tends more surely to cause a suppurating ethmoiditis than such inflammatory thickening of the middle turbinated.

There is not time to describe more fully all the neglected nasal conditions which are competent to produce chronic ethmoidal disease. We shall be on the right side if all pathological conditions are kept in abeyance by judicious treatment.

There is another aspect of the subject which may be considered for a moment. We believe that chronic suppuration of the ethmoidal region has not infrequently been produced by badly-performed surgical work in the nasal passages: least frequently by destructive agents applied to the inferior turbinated bone, more frequently by work upon the septum, and most frequently by injudicious destruction of the middle turbinated bone. This is a difficult region to treat in anything like an antiseptic way. It is almost impossible to secure ample drainage. Many times operations are commenced upon the middle turbinated without any definite plan, and a portion of its anterior face is broken into. A wounded surface which is completely exposed to infection is left, and nothing has been accomplished in the way of thorough removal of the bone. The operator commences with the purpose of removing a portion of the bone or of opening into the ethmoidal cells; but the difficulty of the work compels him to desist before the object is attained, and he leaves a condition which is most favorable for the production of suppurative ethmoiditis. This procedure of destroying the middle turbinated is followed often, we are sorry to say, when there are no special symptoms of trouble referable to it. The examiner finds only that the bone is too large—or perhaps we should say—larger than he thinks it ought to be. Who shall say that a certain degree of enlargement of the middle turbinated when all the tissues anterior to it are atrophied, is not Nature's compensative method of protection? The middle turbinated bone is constantly mangled without definite object, and with most injurious results. There is more excuse for operating in this region when there is an acute ethmoiditis, or

where there have been several acute attacks, but we know of no better treatment for acute ethmoiditis, if the desire be to save our patient from that most distressing condition of chronic suppuration than to exercise the greatest conservatism in the local nasal treatment during an acute attack. External cold applications, bleeding the bone by superficial scarification, protection with a sedative nasal powder, and the administration of such remedies as will lessen congestion and fever, are far safer than deep cutting into the middle turbinated, which is likely to increase the inflammation and may end in a suppurative process.

It is hardly necessary to say that *all* surgical work about the middle turbinated should be as cleanly as possible. No work should be attempted unless the wound can be kept clean and drainage secured. We greatly deprecate the use of the galvano-cautery on the middle turbinated bone. It perhaps remains to be said that all uncleanly, unscientific surgical work upon the septum—work which leaves different tissues crowded together, so that there is no adequate drainage—is dangerous, not because of the transient septic symptoms which may follow, but because this sepsis may be carried into the sinuses and cause chronic suppurative disease. Even the persistent use of irritating nasal sprays may cause acute ethmoidal inflammation, and it requires but little infection to convert this into a chronic process.

The entire purpose of this paper can be stated in two words: First, no nasal disease should be allowed to progress far enough to produce obstruction, deficient drainage, the close contact of the tissues and the retention of muco-purulent secretions, because in these conditions there exists great danger of extension of disease to the sinuses, and especially to the ethmoid, and second, all surgical procedures in the nose should be carefully and cleanly performed that no resulting infection can produce a chronic suppurating ethmoiditis.

123 East Nineteenth Street.

REPORT OF AN INTUBATION, WITH COMPLICATIONS.*

BY JOSEPH MULLEN, M.D., HOUSTON, TEXAS.

I saw A. G., white, aged two years, December 13th. Diagnosis, diphtheritic laryngitis. Intubation was performed the same night. It was easy and natural in every respect. Only 3,000 units of anti-toxine were administered during the course of the attack. Five days after intubation, extubation was attempted without being able to remove the tube. It was found that, with the effort of extraction, the intubation tube, larynx and base of the tongue were lifted up into the fauces. Six attempts were made, at intervals of a week apart, with the same inability to extubate. In all these efforts strong downward pressure was made with the index finger of the left hand to counteract the upward lifting of the extractor. Efforts directed to peeling off of the tube from the larynx were likewise futile. For three weeks after recovering from the attack of diphtheritic laryngitis, the child ran around the garden and sidewalk without any apparent inconvenience in breathing. On January 24th, six weeks after intubation, it became imperative to remove the tube as the little patient showed symptoms of la grippe. Hence the crico-thyroid membrane was opened. Inspection of the larynx failed to show the tube. The operation was converted into a laryngo-tracheotomy, and still no tube to be seen. With reflected light, however, a long, round ridge of granulation tissue was seen extending upwards into the larynx and downwards into the trachea. This mass, after being picked and scraped away, disclosed the gold-plated tube, black as vulcanized rubber. After sufficient of this tissue had been removed, the tube was grasped with forceps and pushed up through the larynx into the mouth with the index and middle fingers of the left hand pressing down upon the larynx, practically stripping it from the tube. Six hours after the laryngo-tracheotomy the child developed a catarrhal pneumonia from which she made a slow recovery. At present her voice is very much impaired in tone and volume, but is gradually returning to normal.

* Read before the Texas State Medical Association, Galveston, Texas, April 24, 1901.

ATROPHIC LARYNGITIS.*

BY B. TAUBER, M.D., CINCINNATI, O.

I do not intend to enumerate all the cases reported since 1861, nor describe the pathological process. This atrophic degeneration is a gradual wasting away of the different layers of the mucous membrane, and the conversion of their individual elements into fibrous connective tissue. The crusts are composed of degenerated, fatty epithelium, muco-pus cells, and detritus.

During my twenty-five years of practice on diseases of the upper air-passages in this city, a great many cases of atrophic pharyngitis, rhinitis and posterior-nasal inflammation came under my care, and I call your attention to one "*unique*" case of atrophic laryngitis, which I have treated ten years ago, in Denver, Colo.

In the text-books and literature on laryngology and rhinology, we find a great many cases reported under different headings, as atrophic rhinitis, pharyngitis, laryngitis sicca, ozena atrophica and ozena trachealis.

Most of the observers believe that the atrophy is a catarrhalic inflammation of the nose, pharynx and posterior nasal space, a morbid condition of the mucous membrane with diminished secretions of the glandular tissues; they become destroyed, dry up into scabs, and adhere tenaciously to the mucous membrane; sometimes they pass upwards and downwards to the arytenoid commissure into the larynx and trachea.

Woacks¹ says the atrophy is due to a vaso-motor neurosis of the superior cervical ganglia of the sympathetic nerve; by the inherent defect it becomes the part of least resistance, hence a mal-nutrition takes place.

Mullhall² reports a case of "*laryngeal hiemalis*," or winter laryngitis, in which the crusts cling to the surfaces of the vocal bands, to the arytenoid cartilages into the commissure, and accompanied by aphonia.

In the majority of cases we find generally the atrophy present in the nasal cavities, anterior and posterior, in the pharynx, soft palate and uvula; seldom the atrophy attacks the interior of the larynx; in my typical case these crusts were principally located in the "interior of the larynx."

* Read before the Western Ophthalmologic and Oto-Laryngologic Association.

Let me give you now a short history of the Colorado case. Miss W. S., of Louisville, Colo., altitude 6000 feet above the sea level, eighteen years old, well nourished, enjoyed heretofore good health, was not predisposed to colds in the nose or throat, consulted me in Denver, Colo., on July 1, 1891. She complained about three weeks ago of a distressing dryness with great difficulty to clear her throat, accompanied by a harassing cough, slight dyspnea and nausea, no fetor from the nose or mouth, and a complete loss of voice.

The anterior and posterior rhinoscopic picture presented in both nasal spaces, the nasal folds, septum and turbinated bones in a hypertrophic condition, as also in the posterior vault of the pharynx.

Laryngoscopically, found in the anterior portion of the epiglottis "*the petiolus*," the ventricles of the larynx, the ventricular bands, and the two vocal bands anteriorly, covered with a black-looking mass, like a "cast," extending downwards to the glottic region into the second and third rings of the trachea.

It was not an easy task to remove these incrustations from their positions, they reappeared each day after being removed for twenty consecutive days, and when removed a sub-acute laryngitis was present, the vocal bands were swollen, reddened, eroded, streaked with muco-pus and blood, and on phonation a complete aphonia, with a paresis of the tensor muscles.

On the twenty-first day the masses disappeared "*in toto*" from the *entire interior of the larynx*; at the same time treated also the hypertrophic condition of the nose and throat.

The local applications in the larynx were made by sprays of a solution of bicarbonate of soda, boric acid and diluted hydrozone, and nebulizations of oily camphor-menthol, to increase the nutrition of the mucous membrane and glands, ordered warm inhalations of terebine by the steam atomizer, and injected occasionally ol. eucalyptus in lavolin into the trachea.

The crusts from the larynx were removed with slender curved laryngeal forceps and probangs, applied mild astringent solutions, also insufflations of powdered iodol, boric acid, nosophen, and, lastly, the alternating electric and galvanic currents, to the vocal bands.

Ten days after the disappearance of the atrophic masses from the larynx the patient was advised to return to her home with instructions to keep up regularly a thorough cleansing of the upper air-passages with antiseptic and alkaline sprays.

In July, 1893, the patient called again for examination. There were no signs of atrophy in the larynx, the hypertrophic condition

of the anterior and posterior nares in good condition, the vocal bands approximated nicely, no hoarseness, and her voice normal.

Generally, the atrophic condition in the air-passages is of a chronic nature, with little tendency to radical improvement except under a very long continued local treatment of the entire air-tract.

In the majority of cases, the disease is "local" in character; however, I placed her under constitutional treatment for two years, changing the remedies every six months, as strychnia, phosphide of zinc and iron, iodide of sodium and arsenic; also made hypodermic injections of $\frac{1}{30}$ of a grain of pilocarpin; from the latter I have not observed any good effects.

As catarrhal diseases do not always extend by continuity of tissue from the naso-pharynx to the larynx, I consider this case to be "unique," because "*atrophy*" was present in the larynx proper, and "*hypertrophy*" in the nasal passages; the moist current of air from the nasal passages and vault of the pharynx should have prevented the atrophy in the larynx, and had to treat two different conditions in the larynx and nose.

The winter laryngitis, caused by the inhalations of excessive cold air, cannot apply to my patient, as she contracted the disease during the hottest weather in June. I think this exclusive atrophy in the larynx was caused either by a local inflammatory condition in that locality, accelerated by breathing dry air in a very high altitude, or to some atmospheric and metrological changes in the soil.

No. 213 W. Ninth Street.

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SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, April 24, 1901.

W. K. SIMPSON, M.D., Chairman.

Sublingual Calculus.

DR. M. D. LEDERMAN presented this specimen, which had been taken from a young man who had come to his office about two weeks ago complaining of difficulty in speech and with swelling of the sublingual and submaxillary glands and tenderness on pressure. According to the history there had been a similar attack about two years ago, and he had expectorated some hard material after having some acid applied. On inspection, there was a small fistula to the left of the raphe of the tongue, and the probe detected some gritty substance. An incision about one inch long was made on a director, and with some manipulation with a spoon curette he had been able to remove this specimen and evacuate about two drachms of pus. The probe had then been passed about three-quarters of an inch into Wharton's duct. Inasmuch as both glands were involved he came to the conclusion that the sublingual duct and the duct of Wharton had both been closed by the stone. There was a family history of gravel. The swelling had been more particularly underneath the tip of the tongue. Dr. Lederman thought if these cases were left alone for any length of time they would be apt to lead to a suppurative cellulitis of the neck. He recalled a case that had followed this course from infection of the gland, after a suppurative otitis. Prompt incision along the floor of the mouth avoided an external operation.

DR. T. R. CHAMBERS said that three days ago a man had come to him with a swelling under the tongue, and pressure on the duct had caused the appearance of some mucoïd material. He had then been able to remove a stone about as large as the tip of his finger, doing it under cocaine anesthesia. There was no pus. The man made an uneventful recovery.

Inferior Turbinal Blown from the Nose.

DR. FRANCIS J. QUINLAN presented an inferior turbinal body from a boy of fifteen years. Examination had shown an area of dead bone and some occlusion, and the probe had detected a rough, hard body. Operation had been deferred, and in the meanwhile the boy had ejected this piece of bone while blowing his nose. There had been absolutely no lymphadenitis and the boy had been free from even the diseases of childhood.

Dr. Quinlan also referred to a case, seen at the New York Polyclinic, in which there had been an erosion under the bicuspid tooth extending along the hard palate. The man had been seen at one of the large institutions fifteen months ago, and a diagnosis had been made of carbuncle of the palate. The mass had discharged some material not exactly the character of pus, but rather like the contents of a cyst. On inspection, there was found a considerable area of bare bone, and he appeared to be suffering from pyorrhea alveolaris as well. The case was interesting because on the first sight one would have thought it to be specific in its nature.

DR. MEIERHOF thought this was purely a local condition, due to suppuration in the cavity of the tooth. The man had probably had a periostitis of the palate and a cystic formation, which had ruptured. He did not think these cases were especially uncommon. Very mild forms of pyorrhea alveolaris were present in many mouths and the secretion from this was often the cause of neighboring infections.

A Pocket Sterilizer and Instrument Case.

DR. W. P. HERRICK exhibited a pocket sterilizer that he had devised. It consists of a metallic box containing a compact alcohol lamp and a wire instrument tray.

A Case of Pachydermia of the Larynx.

DR. WOLFF FREUDENTHAL presented a man, forty-two years of age, who had been well up to ten months ago. At that time he had begun to suffer from pain in the throat and huskiness of the voice. He had been treated in Albany for the ulceration, and had then been advised to go to Denver. On his way there he had been treated for a few weeks in Chicago by a competent laryngologist. The latter had not found any ulceration or other evidence of tuberculosis, and had dissuaded the patient from going to Denver. Examination showed the vocal cords somewhat thickened, and the arytenoids slightly edematous. There was a small defect on the right vocal cord into which fitted the other arytenoid. On the other vocal band

was a small cicatrization. The man had received iodide for eight weeks without any benefit, and there was no breaking down of the tissue. The process had gone on for ten months, but its acute onset seemed to exclude tuberculosis. Examination of the lungs and of the septum had been negative. Further inquiry had elicited the fact that for at least ten years there had been more or less huskiness and a chronic laryngitis. Although the case did not present the classical features of pachydermia he would make this diagnosis by exclusion. The man objected to the snaring off of a portion for examination.

DR. QUINLAN said that the case seemed to be a form of the arytenoid laryngitis with a new growth or possibly tubercular invasion. A microscopical examination would prove very important in this case.

DR. M. D. LEDERMAN said that the cases of pachydermia laryngis that he had seen had all occurred in Russians or Poles, and the picture presented by the case under discussion was not that which he had seen in these other cases. It was possible that a tubercular process might exist without bacilli being present.

DR. MEIERHOF did not see how it was possible to consider this a tuberculous process. The general appearance of the patient and of the mucous membrane seemed to him to preclude the idea that the process was tubercular. The mucous membrane did not even exhibit the appearance observed in the pretubercular condition of the larynx. There was at present evidently some disease of the perichondrium, and this would account for the edema. He would not entirely exclude syphilis.

DR. FREUDENTHAL said that from his knowledge of the man it seemed to him very improbable that there had been an opportunity for syphilitic infection. The coloring of the mucous membrane seemed to him to exclude tuberculosis. He could not imagine the possibility of anything else in this case but a *primary* tuberculosis, and if it were primary there should certainly have been some lesions of the lungs by this time.

Dentigerous Cyst.

DR. A. B. DUEL presented a young man who, while skating two years ago, had fallen and broken two teeth. Nothing more had been thought of it until about one month ago when, on endeavoring to have a set of artificial teeth put in, a swelling had been found. Because of this he had sought advice at the Manhattan Eye and Ear Hospital. Examination had shown an apparently fluctuating cystic tumor included in thin bony walls, and of a non-inflammatory type.

It was apparently not connected with the antrum. Transillumination showed the affected side to be fully as clear as the other. The case was evidently one of dentigerous cyst.

Supplementary Report on a Case of Hodgkin's Disease.

DR. FRANCIS J. QUINLAN said that a few weeks ago he had presented a case of Hodgkin's disease which had elicited considerable discussion. Within the past three weeks there had been a gradual increase in the neck, arms and inguinal region. He had hoped to present the boy again, but the child was at the moment in a dying condition in the hospital. Careful examinations from time to time had excluded retropharyngeal abscess and had fully confirmed the diagnosis previously given, viz., Hodgkin's disease.

The Importance of Preventing Suppurating Ethmoid Disease by Prompt Local Treatment.

DR. CLARENCE C. RICE read this paper. This paper is published complete in the June, 1901, issue of THE LARYNGOSCOPE; page 419.

DR. FREUDENTHAL said that chronic ethmoiditis was often produced by treating acute coryzas. After the removal of the adenoids he preferred to send the patient to the country for a few months. This prevented the recurrence of the adenoids, and also ethmoiditis.

DR. QUINLAN said that the paper must serve a useful purpose in emphasizing the necessity for removing the causes of disease in the nose. The entire contour of the septum should be slowly and carefully mapped out, and the points of contact noted and corrected if one would avert the various pathological changes. When the middle turbinal touches the septum one should never hesitate at once to secure the necessary ventilation and drainage of the accessory sinuses for, if the tissues were allowed to remain collapsed against this perpendicular partition, a vicious circle would be established, and the lymphoid tissue in the rhino-pharynx would soon present serious pathological conditions.

DR. M. D. LEDERMAN said that some years ago he had learned that the mucous membrane of the nose should be prepared for surgical work just as one prepares the general system for surgical operations. When such preparatory treatment was carried out there would be much less reaction, less secretion and less discomfort. As to the extensive destruction of the middle turbinate, when this was done there would be a formation of crusts, and infection was apt to arise from this cause. Dr. Delavan had suggested submucoid incision along the turbinate to relieve congestion, and this suggestion seemed to him an excellent one.

DR. RICE, in closing, said that the tendency was to give too little importance to the adenoid operation, and hence the suggestion about sending these patients to the country was a good one. He had been impressed with the number of cases of disused nostrils in adults, possibly as a result of adenoids in childhood. The nostril was in a perfectly quiescent condition, not even showing excessive secretion. This indicated that parts might be in contact without giving rise to symptoms. Of course, such cases were exceptional. Preparatory treatment of the mucous membrane was desirable, but he thought more could be accomplished by antiseptic dressings after than before operation. He favored the persistent use of powders for the first forty-eight hours after operations in preference to the older method of persistently washing the nasal passages. The sealing over of the wound by a powder was an excellent safeguard against sepsis.

Nasal Condition Observed in the Aged.

DR. BEAMAN DOUGLASS read a paper with this title. It was based on observations made in persons over forty-five years of age. The majority of the patients were from the middle walks of life. In his experience, patients rarely sought relief from nasal and pharyngeal disorders after the age of fifty; the majority of them come between the ages of sixteen and forty. The explanation seemed to be that the pathological conditions present give rise to fewer symptoms in later life. He had found no diminution in the sense of smell even after those of sight and hearing had begun to be impaired. Five cases were reported in detail to show that although chronic pathological conditions exist there had been an almost complete absence of the usual symptoms. This state appeared to exist only in the aged. Hypertrophic conditions were present without symptoms of nasal catarrh, and as it seemed possible to exclude outside causes one was forced to the conclusion that they might have resulted from blood conditions. This was not unreasonable if one recalled the fact that extensive cirrhosis of the liver may occur without giving rise to symptoms. The slowness of the process explained the absence of symptoms of inflammation. If the blood circulation were fairly active in the nose, and yet was pathological as regards the salts held in solution, some obstruction in the lymphatic circulation might leave these in the tissues and give rise to increase of connective tissue without producing special symptoms.

DR. MEIERHOF said that one inference from this paper was that a good deal of useless work had been done in the nose. It had occurred to him ten years ago that it was strange that older people formed such a small percentage of the patients coming to the rhinologist. His explanation was that less attention is paid to such symptoms as were present in this class of patients.

DR. D. BRYSON DELAVAN thought the changes which take place in the general circulation with advancing years would explain some of the observations made with regard to nasal conditions in the aged. In early life, the circulation being at its maximum, occlusion was more apt to take place than in the aged.

DR. QUINLAN said that the rhinologist did not see one-third of the people who have obstructive conditions in the nose. Unless there was some direct interference with the special senses or a great deal of discomfort many individuals would not seek the specialist, and it was certainly true that as age advances persons become reconciled to many of the ills of life. Moreover, in later life a peculiar atrophy occurs, thereby diminishing the effects of nasal occlusion or its attendant symptoms.

LARYNGOLOGICAL SOCIETY OF LONDON.

SIXTY-FIFTH ORDINARY MEETING, APRIL 12, 1901.

E. CRESSWELL BABER, M.B., President, in the Chair.

The following cases and specimens were shown:

Case of Tumor of Right Vocal Cord with a Swelling on the Leg in a Boy.

Shown by MR. SPENCER. Shown at last meeting. Since then the patient had taken 15 grs. of iodide of potassium daily, and Ung. Hydrargyri had been applied to the leg every night.

Swellings had largely subsided, tending to show that both had origin from the same cause, namely, inherited syphilis.

Man æt. Thirty-three with Chronic Laryngitis and an Ulcer on One Vocal Cord.

Shown by DR. STCLAIR THOMSON. Patient presented himself for hoarseness, and a constant desire to clear the throat, which had commenced about six months ago. When first examined there was general subacute laryngitis, cords were congested, irregularly thickened and rounded. On anterior third of the left vocal cord there was an oval, boat-shaped ulcer, covered with a greyish slough. A thickening on the opposite cord appeared to fit into this ulcerated depression on phonation.

His temperature was 98.8°, pulse 86; there were no symptoms suggestive of tuberculosis, and nothing was found in his chest. There was no definite history of lues, but he was put on 10 grs. of iodide of potassium three times a day. On a subsequent occasion I examined his nose, and found each middle meatus covered with dirty greenish crusts. He was given a cleansing lotion, and at his last visit no crusts were visible; his left nose was clear, but there was some pus in the right middle meatus and in the right choana. In spite of the improvement in his nose the hoarseness was worse. This was a fortnight ago, and I have not seen him since, but show him to-day, before further treatment is carried out, to see if members agree that the chronic laryngitis and ulcer are both due to infection from the nose.

SIR FELIX SEMON thought it was a simple case of chronic laryngitis, and was not tubercular or specific.

THE PRESIDENT said he was not sure of the presence of ulceration in this case.

DR. STCLAIR THOMSON, in reply, said that at first the idea of tubercle had occurred to his mind whilst diagnosing the case; but the temperature was normal, the pulse not hurried, and though repeated examinations of the chest were made, no signs of pulmonary tuberculosis were detected. There was no history of syphilis. Iodide of potassium was given, but this did not improve the patient, in fact the drug made him much worse. There was nothing definite about the nose, but there was a good deal of catarrh. He decided in favor of chronic laryngitis, possibly of nasal infection.

Case of Infiltration of Right Cord of Three Months' Duration in a Man æt. Forty.

Shown by DR. STCLAIR THOMSON. This man has been hoarse since early in January. It will be seen that the posterior two-thirds of the right cord is represented by an even, red infiltration. The cord moves freely. There is some general hypertrophic laryngitis. The cavum is clear; some polypi have been removed from each nostril. He has had some treatment with iodide of potassium, although there is no history of lues. Rest to the voice and abstinence from tobacco and spirits do not appear to have improved him.

DR. JOBSON HORNE considered that the changes to be seen in the larynx suggested *pachydermia diffusa*.

DR. STCLAIR THOMSON, in reply, agreed with the remarks put forward by Dr. Jobson Horne, and thought the case more like one of pachydermia diffusa. The patient had been watched for some time. He was suspected of being addicted to alcohol.

Case of Infiltration of the Right Vocal Cord of Six Months' Duration in a Man æt. Fifty-Six.

Shown by DR. STCLAIR THOMSON. This patient has been hoarse since September, 1900. The central portion of the right cord is rounded, red and infiltrated. As to the movement of the affected cord I have been considerably puzzled. At times it has appeared to move freely, but on other occasions I have felt convinced that it was slow and partially tethered in its excursions. The rest of the larynx is normal. He presents no changes in nose, pharynx, or chest. There is no history of suspicion of lues, but he has been given iodide of potassium up to 15 grs., three times a day, without any result. His weight is 12 st. 9½ lbs., and does not vary. Feeling that the appearances were uncertain and suspicious, I asked Sir Felix Semon to see the patient, about four months ago, and his conclusion was that there was not then sufficient evidence to justify a diagnosis of malignancy. Two months ago the patient was seen by Mr. Butlin, who wrote to me as follows: "I do not think it is a new growth. It is too smooth, and there is too free movement of

the cord. Also, his voice is not so badly affected as I should expect it to be with a malignant tumor of that size and character. On the other hand, I do not think that so definite and limited a swelling of the cord is likely to be due to any ordinary chronic inflammation. It is not like tubercle, not quite like syphilis, not like any of the 'infective' group of tumors. I have twice opened the larynx for somewhat similar tumors, under the impression that, if the disease was not malignant, it was too suspicious to be left. In one case I found in the center of the rounded swelling a little mass of what appeared to be coagulated blood, in the other something of the same kind, but not so dark-colored. One of the patients was a clergyman, the other a commercial traveler, therefore they both used their cords a good deal. I cannot help suspecting that this may be a case of a similar kind, in an agent who talks a good deal. In both my cases there was the same redness of the affected cord. I do not know whether you can get rid of the tumor without incising it or carefully cutting it away, taking the greatest care not to injure the cord itself in doing so. To do this may necessitate the opening of the larynx from the neck."

Both my patients are voice users; this one is a commercial traveler, while the former one is a shop assistant.

One of Mr. Butlin's cases is described by Sir Felix Semon in an article on "Blood-clots simulating Neoplasms in the Larynx,"* and the description there given certainly suggests a similarity to the present case.

Case of Laryngeal Neoplasm Occurring on the Posterior Wall, and Accompanied by Paresis of Left Vocal Cord in a Man æt. Forty-Nine. For Diagnosis.

Shown by DR. SCANES SPICER. The only symptom had been hoarseness of gradual onset, commencing over four years ago. The growth was sessile, and attached to the posterior wall. A portion was curetted off, and reported by a pathological expert to be tubercular. Six weeks later a further portion was removed, and was deemed, after examination by the same expert, to be malignant. There had been no pain, hemorrhage, or emaciation, and there are no enlarged glands; no purulent infection from sinuses or nasal stenosis. There are no history or signs of syphilis or tuberculosis, and nothing to suggest excessive or perverted use of voice, or special exposure to dust in occupation. The patient had been on

* *Annales des Maladies de l'Oreille, etc.*, xxv, No. 8, 1899

potassium iodide (gr. v, t. d. s.) for two months with no effect on his condition.

SIR FELIX SEMON feared the growth was malignant. Seeing that it was so very small, he advised an exploratory thyrotomy to aid the diagnosis, which was certainly difficult.

In reply, DR. SCANES SPICER said that, as there was a conflict between the evidence of the histologist and that of the history of the case, and as the clinical appearances were equivocal, he welcomed the remarks that had fallen from Sir Felix Semon. He had not seen the section himself, but clinically he doubted the malignant theory.

A Case of Laryngitis with Marked Subglottic Hyperplasia Occurring below the Anterior Commissure in a Man æt. Thirty-six. For Diagnosis.

Shown by DR. SCANES SPICER. The illness commenced with horseness four months ago. The patient is anemic, but there is no evidence of tuberculosis, there being no emaciation, night sweats, hemoptysis, or cough, and there is no history of any other disease. The treatment for the last month had been a spray of chloride of zinc and small doses of iodide of potassium. Dr. Spicer thought the case was not at all plain, and seeing that the patient was a corn dealer, he inquired whether it was possible that a husk had become imbedded in the larynx. Occasionally the epiglottis and aryepiglottic folds became edematous.

DR. DUNDAS GRANT thought it was a case of tuberculosis.

DR. PEGLER said, had not the evidence against tubercular disease of the lungs been confirmed, he would have regarded the laryngeal disease as tuberculous, to judge from a casual inspection.

A Specimen of a Larynx from a Case of Primary Laryngeal Diphtheria.

Shown by DR. LOGAN TURNER. The case was of interest from the fact that the disease was confined entirely to the larynx, that it occurred in a strong vigorous adult, and that it ran a rapidly fatal course. Frequent attacks of severe dyspnea necessitated tracheotomy. *Post-mortem* examination showed the mucous membrane of the larynx to be covered with diphtheritic membrane, which extended from the apex of the epiglottis to the cricoid cartilage. Bacteriological examination demonstrated the presence of the Klebs-Löffler bacillus and streptococci.

A Specimen of a Larynx for Diagnosis.

Shown by DR. LOGAN TURNER. The larynx was removed from a boy æt. eight years, who had died suddenly during the night from

asphyxia, resulting from the drawing of vomited matter into the larynx and bronchi. All the organs of the body were healthy.

The mucous membrane of the larynx and upper part of the trachea was studded with a number of small white points, varying in size from a half to one millimetre or more in diameter and resembling small miliary tubercles. The posterior surface of the epiglottis was almost completely covered by a large white patch of a similar kind. There was no evidence of ulceration or swelling.

The microscope showed that each patch appeared to consist of a small area of lymphoid tissue, lying beneath the epithelial layer, and infiltrating between the glands of the submucous layer. There was a small communication with the surface. There were no giant-cells or other evidence of a tuberculous condition.

DR. JOBSON HORNE said he examined the larynx, and also the microscopic section; he did not consider the minute nodules to which attention had been directed had any pathological significance. By the epithelium having been destroyed, the underlying structure had become more obvious.

A Case of Destruction of the Nose caused by a Ferret.

Shown by MR. WALSHAM. The patient is now twenty-four. At the age of three months a ferret was found gnawing her face. The whole of the nose, part of the skin of the forehead, and a large part of the middle of the upper lip were destroyed. She has had eighteen plastic operations, the most successful being done by Sir Thomas Smith in 1887, when the skin was taken from the arm, the arm then bound to the face for three weeks to fashion the nostrils, and the lip was repaired. The lip was very successful, and the left nostril fairly so. She has had the Indian operation done also, but it was a failure.

Right nostril was open, but closed up after last operation in 1899.

The PRESIDENT said that he agreed with Mr. Walsham that nothing further should be done. He added that he understood from Mr. Walsham that the introduction of cartilage in this case had been tried without success.

A Case of Epithelioma of the Larynx.

Shown by DR. JOBSON HORNE. The patient, a man *æt.* sixty-nine, stated that in August, 1899, he had "influenza" which was followed by some impairment of voice, and which had gradually increased; he had experienced no pain or discomfort, and had not troubled about medical advice. Excepting an occasional cold, he considered his general health had been good.

The growth occupied the anterior two-thirds of the right vocal cord, and appeared to be confined to this region. The greater part of the growth was a papillomatous mass filling the anterior third of the glottis. Right vocal cord motionless. Left not affected. Some general congestion of the larynx, but not more marked on right than left. No glandular enlargement.

Thirty grains of iodide of potassium had been taken daily during the previous fortnight without any material change.

The PRESIDENT said it looked malignant. There was want of action on the right side of the larynx.

SIR FELIX SEMON was of opinion that there could hardly be any doubt as to the malignancy. There should be no hesitation in performing thyrotomy and removing the growth.

DR. FITZGERALD POWELL said the patient had declined operation in January, and he had not seen him again until now. Though still thinking it malignant, the tumor had not grown or altered very much since January.

DR. JOBSON HORNE, in reply, expressed his thanks for the opinions, which he also shared.

Case of Tubercle of the Larynx in a Man æt. Eighteen.

Shown by DR. FITZGERALD POWELL. The patient states that he has suffered from gradually increasing hoarseness and difficulty of breathing for the last four years, accompanied by cough and attacks of suffocation at night.

On examination the epiglottis, arytenoids, ventricular bands and as much of the larynx as can be seen are found to be pale and much swollen, and there appears to be very little room for respiration. The swelling in parts is covered by superficial erosions.

He had applied a five per cent ointment of salicylic acid to the nose and face, which had caused some improvement.

Specimens from Recent Cases Illustrating the Two Chief Classes of Intra-Nasal Papillomata.

Shown by DR. WYATT WINGRAVE. 1. The squamous variety regionally belonging to the vestibule, and histologically identical with an ordinary cutaneous wart. 2. The columnar or cylindrical variety only growing on mucous membrane, and therefore never found in front of the lumen vestibuli.

This latter may grow from the septum, floor, or turbinals, and is often referred to as a "moriform growth." Histologically it presents digitations of myxedematous tissue covered with columnar or "palisade" epithelium, ciliated and smooth, resting upon a hyaloid basal border.

Warts on the mucous membrane may, however, be covered with squamous epithelium, a heterologous feature which is due to irritation causing retrograde changes, as seen in atrophic rhinitis, and often in slowly growing polypi.

One specimen is that of a "bleeding tumor." It is a squamous papilloma, which grew from the septum about half an inch behind the lumen vestibuli and above the floor. The "core" consists of numerous blood-vessels with very thin walls, which run into the digitations. Nests are found, but not of the "horny" variety so characteristic of the vestibular and cutaneous variety. The surface epithelial laminae are also thinner.

Bleeding tumors other than malignant and granulomatous most frequently are of one of these two types of papillomata.

A Case of Pharyngo-Mycosis in a Female.

Shown by Mr. ATTWOOD THORNE.

DR. SCANES SPICER said the question to be considered was whether these cases should be actively treated or not. When the patients were worried by symptoms such as a sensation of a foreign body, scraping, discomfort, sourness of breath, unpleasant taste, and flatulent dyspepsia, he would recommend active treatment, such as the free and regular use of alkaline antiseptic washes, the application of perchloride of mercury solution to the crypts, or the insertion of the galvano-caustic point into three, or four, or six of these at a time. He usually found that these cases were very obstinate, and that even long holidays, alternating with periods of active treatment, by no means guaranteed freedom from recurrence. Patients suffering from mycosis were not as a rule content to be left alone.

DR. PEGLER inquired whether a bad taste in the mouth was complained of.

DR. FITZGERALD POWELL advised scraping with a sharp curette once or twice a week, and the application of a solution of nitrate of silver, twenty to thirty grains to the ounce.

DR. WYATT WINGRAVE emphasized the importance of differential diagnosis between true leptothricia and keratosis of the tonsils. The latter appeared as hard papillary projections from the lacunae, not easily removable, and showing under the microscope typical horny epithelium with few or no leptothrices. He had found a saturated solution of salicylic acid (well rubbed in) the best treatment for keratosis, while true pharyngo-mycosis yielded to sulphurous acid and antiseptics.

MR. PARKER thought that the most important point to be remembered in the treatment of cases of mycosis was that in the early stages of the trouble the fungus was very firmly adherent and very difficult to remove or destroy, but that if it was left alone for a few months—some placebo being given to the patient in the meanwhile—the fungus growth generally became quite loose, and it could then be easily wiped away.

SIR FELIX SEMON said he found that these cases, whether of the leptothricial type, or a true keratosis, always occurred in people very much below par, and if they were ordered change of air, tonics, rest, open-air exercise, etc., they would, in his opinion, get well without any other treatment, medicinal or operative. In his experience a bad taste was not at all usually present in the mouth.

Case of Antral Suppuration with Marked Distension of the Inner Antral Wall.

Shown by DR. HERBERT TILLEY. The patient is a boy æt. sixteen, who came under treatment for inability to breathe through the right nostril and a purulent nasal discharge, associated with feeling of langor and general depression.

Examination of the right nasal cavity showed a large swelling of the inner antral wall, which touched the septum opposite. On pressing it outwards with a probe a crackling sensation and noise were produced. A ridge of bone traversed the swelling from above downwards, and at first sight the appearance closely resembled that of a swollen middle turbinal, but the latter bone could be seen in its normal position above.

The bone ridge referred to was undoubtedly the uncinate process of the ethmoid, and immediately in front of this the soft bulging could be easily penetrated by an ordinary surgical probe.

The right second upper bicuspid, which was carious, was removed, and for three months the patient had been irrigating the antrum twice daily with various antiseptic washes. As long as these were continued the discharge practically ceased, but if the irrigation was interrupted for two or three days, then the discharge reappeared. The question arose as to whether any radical operation, such as removal of the bulging inner wall; or even a more radical procedure, should be adapted. The patient's father was very averse to any operation unless it was absolutely necessary for the cure of the case.

The PRESIDENT said that Dr. Tilley's motive in showing the case was to receive suggestions for treatment. It seemed as if the inner wall of the antrum was very much bulged, but, to make certain of this, examination of the parts with a fine probe was necessary. He would not advise a radical operation being done at present. The opening had only been made in January last, and the discharge, according to the patient, was slight in quantity, therefore he thought syringing should be continued for a time.

DR. FITZGERALD POWELL said that if it was a fact, as he understood was the case, that there was no discharge at all, he did not think it was necessary to do a radical operation on the chance of discovering polypi.

DR. SCANES SPICER saw no objection to waiting a little longer before resorting to further operative measures.

Case of Cyst of the Thyroid.

Shown by DR. PEGLER. The patient was an elderly woman under the care of Dr. Frederick Spicer, for whom the exhibitor had offered to show her to the Society. An operation was contemplated next day, and Dr. Spicer would be glad of suggestions.

The swelling was the size of an orange, tense, fluctuating, and having a history of about eighteen months' duration. There were pressure symptoms, which had increased latterly, and the larynx was considerably displaced.

The PRESIDENT said that he was always doubtful as regards the cystic nature of these growths. He had had a large experience of them, and he was of opinion that without puncturing it was not possible to say whether they were cystic or not. This, he believed, had not been done in this case; probably not one, but several cysts would be found. With regard to treatment, the shelling out of these cysts could usually be accomplished without much difficulty; but in those cases where it could not be done, he had adopted the plan of opening the cysts and sewing the wall to the edge of the skin, allowing the cavity to granulate up. It took a longer time, but gave good results. He had been in the habit of puncturing goitres for exploratory purposes for many years, but had had an unusual experience lately. Immediately after puncturing a moderate sized goitre in a woman aged twenty-five, and evacuating only a few drops of blood, the gland swelled up slightly, and a few days afterwards he heard from the medical man that an extensive ecchymosis had come out, extending down to the nipples. This soon subsided, and the gland returned to its previous size. Some tachycardia was present in this case, but no exophthalmos.

DR. DUNDAS GRANT asked if other members of the Society had had good results from tapping and then injecting perchloride of iron, as formulated by Sir Morell Mackenzie. He had several cases in which this procedure answered well. He was guided beforehand by the degree of collapse that the cyst underwent after tapping, and previous to injecting with iron.

SIR FELIX SEMON could answer Dr. Grant's question. Some fifteen or twenty years ago he had a very lively controversy in the *British Medical Journal* on the injection treatment of goitres. He then quoted a number of cases showing that the injection of iodine occasionally was very dangerous. Since then he knew of another case in which injection of iron after puncturing a cyst had been followed by inflammation of the gland, sepsis and death. In former years he himself had used injections a good deal in his cases, and had never personally had any bad result, but he had now completely given up this method of treatment. The surgery of the thyroid gland had made such advance that one ought not to have recourse to such

expedients as injections now, when one could remove the whole thing more simply and surgically.

The PRESIDENT agreed with Sir Felix Semon that the injection of iron was not satisfactory. It might produce an abscess, and give rise to a great deal of trouble.

DR. STCLAIR THOMSON thought that in modern surgery the method of tapping and injecting cysts had gone out of practice. It was simply done in the pre-antiseptic days from fear of opening these cavities, but now they might be opened perfectly harmlessly.

DR. FITZGERALD POWELL said he thought the best treatment was removal of the tumor.

Case of Unusual Tumor on the Posterior Wall of the Larynx.

Shown by DR. LAMBERT LACK. The patient is a female, married, æt. thirty-nine, who for fifteen years has had occasional difficulty in swallowing. This has been worse for the last three months, and the voice has been weak. The patient is thin, but not wasting, and there are no enlarged glands in the neck. On laryngoscopic examination a large, nodular, pale tumor is seen projecting from the posterior surface of the arytenoids on the right side. It is soft to touch, and grows apparently from the posterior surface of the cricoid cartilage. The growth is almost certainly not epithelioma, and appears to be either simple or possibly sarcomatous. Suggestions as to diagnosis and treatment are asked for, since as far as the exhibitor's experience goes the case is quite unique.

SIR FELIX SEMON considered it a very interesting and rare case. Of one thing he felt sure, and that was that it was not carcinomatous, and he was very strongly of opinion that it was not a sarcoma. If it were a malignant growth, there would be by now secondary infection of the lymphatics, and there would also be deficiency of movement of the vocal cord on the affected side, from myopathic disability of the posterior crico-arytenoid muscle. Both these signs being absent here, he was convinced of the innocent nature of the growth. He advised that the growth should be removed by the snare internally, and should be submitted to microscopical examination, and he would be guided in the future treatment of the case by the result of that examination.

DR. STCLAIR THOMSON thought it should be described as an esophageal growth. It seemed to him to be a simple growth, and he agreed with Sir Felix Semon's remarks. Sir Felix and he had seen a similar case in consultation together. The patient was a lady from the Cape, who had a suspicious-looking growth behind the larynx, and they had come to the conclusion that there was an abscess in connection with it, which of course there was not in Dr. Lack's case; but the tumor was like the one in the present case. His own patient returned to the Cape two or three years ago, and he had since heard that she had remained perfectly well. She was an elderly woman;

the glands were not enlarged. No operative treatment was carried out.

DR. JOBSON HORNE, referring to the remarks made by the previous speaker, said he thought the growth sprang primarily and mainly from the arytenoid region, and he regarded it as a laryngeal and not as an esophageal growth.

Case of Specific Perforation of the Palate and Ulceration of the Larynx of Tuberculous Appearance in a Middle-aged Woman.

Shown by DR. DUNDAS GRANT. The perforation of the palate was typical of tertiary syphilis, and there was indirect evidence (miscarriages, etc.) of specific infection. In the larynx the epiglottis was thickened and ulcerated all over in a manner resembling tuberculosis, but without any increase of secretion. Dr. Grant asked whether this appearance had been met with by other members in pure cases of syphilis; he was himself of the opinion that the process in the larynx was of tuberculous nature, and that, in fact, the case was one of mixed tuberculosis and syphilis.

DR. SCANES SPICER said that this case had been under his care some time ago. He regarded the present condition of the epiglottis as a tubercular one, for the appearances differed from all the syphilitic ulcerations he had seen.

PROCEEDINGS OF THE WESTERN OPHTHALMOLOGIC AND OTO-LARYNGOLOGIC ASSOCIATION.

Sixth Annual Meeting—Cincinnati, April 11-12, 1901.

Remarks by the President—M. A. GOLDSTEIN—(St. Louis).

I feel assured that I voice the sentiments of the officers and members of the Western Ophthalmologic and Oto-Laryngologic Association and their friends in expressing our thorough appreciation of the cordial welcome which has been extended to us during the sixth annual meeting of our Society in Cincinnati.

While much of the reputation and standing of our organization depends upon the competency of its officers and members, the scientific value of the papers presented, and the activity and interest displayed at our annual meetings, there is yet another feature which constitutes the real life of our Society, and that is the feeling of good-fellowship and good-will which has existed since the organization meeting. To this cordiality of spirit and the good work of our members during the past five years we must mainly attribute our growth and our success. Though we organized with but a handful of Western co-workers, our honest efforts and steadfastness of purpose gives promise of a natural, healthy growth, and a strong organization.

To-day our membership numbers over one hundred representative active workers in ophthalmology, otology and laryngology; we range from the sunny South to the far West, throughout the Mississippi Valley, from the North as far as St. Paul and from the East to the boundaries of the Allegheny mountains. Surely our geographical limitations offer every prospect of a large society.

The association of ophthalmology with oto-laryngology is an unusual one in special society work at the present time, but it has proven to be a strong and acceptable alliance. While there is a tendency everywhere to limit the work in the specialities of medicine as much as possible in convention, yet the class of our membership makes this combination thoroughly feasible. Many of our members hail from smaller cities where the specialties of ophthalmology and oto-laryngology must of necessity be associated and requires the active practice of diseases of the eye, ear, nose and throat by those of our members who are so situated.

As long as this combination meets with the continued indorsement of our members it will be maintained.

We have found it practical to meet in separate sections:

1. The section in ophthalmology; 2. The section in otolaryngology.

It has been suggested that in future conventions the meetings be so arranged that members may attend both sections.

A Means of Reducing an Over-Growth of the Inter-Maxillary Frenum, Permitting the Retention of Two Central Incisors in Close Apposition, By H. W. LOEB, M.D., St. Louis, Mo.

This paper will appear in full in THE LARYNGOSCOPE.

DISCUSSION.

DR. FLETCHER (by invitation): If I understand the position of the essayist it is that this growth of tissue has a tendency to separate the teeth. In working with cases of orthodontia, I find one law is absolute, namely, that continuous pressure against bone tissue will cause its absorption. This law is taken advantage of in moving teeth, and when they are put in correct position, they are held there for a considerable length of time, for they have a tendency to move back to their former position. This tendency to revert may continue for years, so the practice now is to put a retaining appliance on and have them held in their new places one or two years, depending upon the age of the patient. Of course removing of tissue between the teeth obviates this necessity, but as to the separation being caused by the pull of the frenum of the lip I am skeptical.

There is one feature I think the essayist did not touch upon. Where there is a separation between teeth and the patient is using them constantly, the continual wedging of food will keep them separated. This is a condition we find in the young especially, but it is often found in older patients.

If there is separation at the time of eruption and there is no force brought to bear to bring them together, either by the pressure of the erupting teeth behind the centrals, or by artificial means they may remain permanently separated. I understand this to be the class spoken of. But the law of moving the teeth which is taken advantage of by men who do orthodontia is, that pressure against the bone will produce an absorption at the point of pressure. If the pressure is continued long enough you can change the shape of any bone, the whole shape and expression of the lower part of the face may be changed in this way. In moving teeth,

the absorption is in front of the tooth, cicatricial tissue forming behind.

There is also a pathological condition which should be taken into consideration and that is disease of the periosteum and bone caused by calcerous deposits known by several names, the latest is interstitial gingivitis, formerly pyorrhœa alveolaris and still earlier as Riggs' disease. This condition may progress up the side of the teeth and destroy a great deal of bone and peritoneal membrane producing separation; this may occur in early life or in later years. I have seen it in the deciduous teeth in children at seven years of age, and believe it may at times have something to do with the cause in question.

DR. GOLDSTEIN: I would like to ask whether the reduction of this central space by cicatrization does not necessarily cause a spacing between the adjacent teeth sufficient to overcome the value of drawing the centrals together.

DR. PIERCE: It seems to me that if you substitute scar tissue for normal tissue, the approximation of the teeth is rendered more difficult.

DR. PYNCHON: I would like to ask if it is not a fact that the doctor has also been giving these patients more or less attention as to the nose and throat in order to do away with the habit of mouth-breathing? In one or two cases I have removed with the cautery redundant tissue that grew between the teeth, with the nicest results.

The Attic of the Nose. By EDWIN PYNCHON, M.D., Chicago.

This paper will appear in full in *THE LARYNGOSCOPE*.

DISCUSSION.

DR. BALLENGER, Chicago: I wish to commend the thorough and able paper by Dr. Pynchon, and especially that part of it which emphasises the influence of morbid conditions in the region of the middle turbinate in perpetuating the annual attacks of hay-fever. I believe we have all recognized the influence of polypi, but have overlooked simple enlargements of the middle turbinates, which result in obstruction to the free drainage and aeration of the superior meatus, or, as the essayist happily calls it, the "attic of the nose."

The essayist referred very kindly to some published observations of mine as to the causation of the symptom complex of nasal obstruction, especially as seen in children with post-nasal adenoids. B. Fränkel has seen my published report of this work, and, I understand, has expressed himself as pleased with the same. I will here

quote from my latest statement on the subject: * "The term 'mouth breathing' implies the absence of nasal respiration. In other words, the respiratory functions of the nose are lost to the physical economy.

1. The respiratory functions of the nose are to warm or cool, moisten and filter the inspired air.

"2. In mouth-breathers these functions are absent.

"3. The lower air tract is unable to supply sufficient moisture for physiologic purposes or is deprived of it.

"4. An irritation of the epithelial lining of the air vesicles results.

"5. This irritation causes thickening of the vesicle walls.

"6. Deficient oxygenation of the blood results in imperfect oxygenation of the tissues, half-oxidized products, being thrown into the circulation.

"7. The half-way products cause nervous phenomena.

"8. And malnutrition leads to physical imperfection.

"9. Excessive accumulation of carbon dioxide in the blood impairs the functions of the leucocytes and other cellular elements.

"10. Microbic infection is thereby rendered easy and the partially oxidized products are not removed from the circulation by the leucocytes. The nervous phenomena are thereby augmented.

"The foregoing train of occurrences may be observed in children who are mouth-breathers, whether it be due to postnasal adenoids or other forms of nasal obstruction."

In two previous articles I published what is embraced in the foregoing statement, hoping to call the attention of other observers to the hypothesis as therein stated and get them to make observations along the same line and report them to the medical fraternity. Thus far I have seen no references to this work, but have had the favorable commendation of Fränkel, and trust that others may give it their serious attention and thus help to explain the peculiar train of symptoms which are so familiar in children who are mouth-breathers.

DR. STEIN: In listening to Dr. Pyncheon's very thorough paper, I do not see that he has brought anything new to notice or anything we have not been quite familiar with, and the only conclusion I can come to is that he can treat almost anything from scalp disease to appendicitis by paying attention to the attic of the nose. That might seem rather broad, but he mentions an array of diseases that would probably take up six or seven chapters in a text-book. But I think it has a bad influence upon young men of our specialty. I think that teaching and inculcating such ideas of operative inter-

* Ballenger and Wipperfurth: *A Text-Book on the Eye, Ear Nose and Throat*, pp. 409, 410.

ference and radical treatment—and Dr. Pynchon is, I know, rather a radical operator, for where there is the slightest divergence from the normal in the nose he attributes the disturbance to the condition of the attic and performs a radical operation—the idea is bad to instill into the minds of young rhinologists who are seeking every opportunity to do work.

DR. PYNCHON (closing discussion): It is true that in the process of evaporation the air absorbs the moisture. In regard to Hollopeter, he does not enlarge on the massage feature. The principal reason I mentioned this was to endorse the idea that in hay-fever there is something of a ptomaine nature in the secretion of the nose and patients are relieved by its removal. Dr. Stein has been very liberal in his estimation as regards the number of diseases I can cure by attacking the attic of the nose, but you will remember that one of the numerous diseases is vertigo, and Dr. Stein is my authority for that.

A New Technique for the Reduction of Turbinal Hypertrophies. M. A. GOLDSTEIN, M.D., St. Louis.

This paper appeared in full in *THE LARYNGOSCOPE*, May, 1901, page 325.

DISCUSSION.

DR. PIERCE: My compliments to Dr. Goldstein on this improved instrument. The only point I see to criticise is that the trocar point is too sharp, and unless very carefully used might puncture the surface of the mucosa, which would not be of serious consequence but unnecessary. It would require a good deal of force to induce a blunt or probe-pointed instrument to puncture the submucous-connective tissue and thus break the surface continuity. Otherwise this instrument seems to take the place of the three instruments that I devised for accomplishing the same work.

DR. STEIN: As I understand this method, it is a sub-mucous puncture. When you introduce the probe it is directly under the mucous membrane. Where you have an enormously large turbinal, true hypertrophic tissue, where there is quite a space between the periosteum and the mucous surface, I understand Dr. Goldstein would follow close to the bone. Which line would he follow, close to the periosteum at all times or right under the mucous membrane? I would like to also ask whether he uses this method in the hyperplastic form of rhinitis?

DR. HOLINGER: Dr. Goldstein says the method is valuable in all forms of hypertrophy, and I would like to know whether he is able

to reduce these big hypertrophies of the rear ends of the inferior turbinals which are usually removed with the snare. Another point, Dr. Goldstein says there is no destruction of tissue. I should like to know where he expects success, and what he calls it when he brings chromic acid in connection with the live tissues. I think there must be destruction.

DR. BALLENGER: Dr. Goldstein objects to the removal of the inferior turbinated body with a spokeshave and bases this on various ideas, one being on account of the very severe hemorrhage that follows the operation. I have had very little experience in the removal of the inferior turbinated body. I have done it only three times, twice in the past year. I have only had hemorrhage in one case and that was in the incipient stage of typhoid. The other two cases were not followed by hemorrhage and were not packed to prevent hemorrhage. I am not an enthusiast in recommending the promiscuous removal of the inferior turbinated body, on the contrary I condemn it except in rare and selected cases.

Dr. Goldstein condemns without stint the reduction of hypertrophies with the electric cautery. It is the fashion now-a-days to do that. I say "fashion" advisedly. We physicians follow one another like a drove of sheep. One man is conservative, and another is radical, and it gets to be a fashion. It seems to me that it is fashionable to say "it is a bad practice to use the cautery for the reduction of the inferior turbinated body." I do not use it as much as formerly, nor are my results as good. I believe the objection to the cautery is based upon a theory and not upon facts, and I would be glad to hear the facts to support this claim. I have not heard any one state any facts, but only that it is bad and he does not use it as often as he used to. My own personal observations are that my results are not so good as when I used it oftener. This method may be a better one; I have never used it. I thought when I heard Dr. Pierce read his paper at Minneapolis I would certainly use it. There are objections to the use of chromic acid in this way, and they may be serious; it is a well-known irritant of the renal organs, and I believe it could be demonstrated if the urine were tested that an acute albuminuria would be found present in many instances after its use; therefore, I should be afraid to use chromic acid by the submucous method in cases where renal disease is known to exist. I would think it reprehensible, and I think this should be borne in mind and that we should not use it where we have reason to believe the kidneys are not in perfect order.

The "mulberry" hypertrophies I believe are incorrectly so called in many instances. I believe the condition is sometimes one of true

atrophy. The atrophy when found is no doubt due to the blood pressure within the venous plexuses or "swell bodies" located in this region. The mucosa covering the "swell body" becomes thin and the dark color of the venous blood gives the engaged end of the turbinated a mulberry-like appearance.

I wish to thank Dr. Goldstein for presenting his improved instruments and his experience in using them.

DR. PIERCE asked if I had ever made examinations of the mulberry enlargements under the microscope. I spent two or three hours a day in the Columbus Medical Laboratory for about three years and was particular to examine all cases under my observation. It is a well-known fact that atrophy is often preceded by hypertrophy, and I should, therefore, modify my statement accordingly; but I believe many of these cases finally assume a state of true atrophy in which there is an increase in the connective tissue and a decrease in all other cellular structure.

I have never practiced the radical electro-cauterization as described by Dr. Pierce. Electro-cauterization was at one time done in a radical and destructive way. I count myself fortunate that I did not become a votary to that style of work. I have, however, used the electro-cautery in a more moderate way for ten years and believe it is a method we should not discard. I am only protesting against swinging to the extreme position taken by those who would unqualifiedly condemn electro-cauterization.

DR. PIERCE: I want to go on record as one who believes that, broadly speaking, the use of the cautery in the nose is to be avoided. As used in the past it has gone for good. The good sense of the profession may be depended on to adopt the golden middle way. Regarding the danger of chromic acid, I believe personally it is overrated when used in this way. This point was brought up at Minneapolis, when I read my paper. After an experience of five years I have never seen the slightest indication of any renal trouble following its application. Regarding what Dr. Ballenger says in reference to the mulberry hypertrophy of the turbinated bodies, we find not only that the external contour of the body is changed but the sinuses are increased in number and the interstitial tissue is increased in density and volume. We cannot speak of these cases as atrophies.

DR. PYNCHON: I will say the same as Dr. Ballenger, that I do not use the cautery as much as formerly. As I said in my paper, the original aim of rhinologists was to increase the breath way of the nose and therefore it was the custom to freely cauterize the in-

ferior turbinal. Of late it has been my custom to never give the patient an operation at the first interview. I always put him on a preliminary treatment and if there is present any hyperemic condition it will subside, and if it does subside by the use of medicines there is no use of attacking it surgically. In some cases I use the electro-cautery. When I use it I believe in using it vigorously, because I wish to destroy an excess of tissue and give increased vitality to that portion not cauterized. The result is that the turbinal is restored to its normal condition.

DR. KNAPP, of Vincennes: I am pleased to have had the pleasure of hearing Dr. Goldstein's paper, and to have seen the little instrument devised by him, but until I have given it a trial I shall have very little faith in its efficacy, from the simple fact that in all cases of cauterization I have employed—that is in hypertrophy, I do not speak of hyperemic conditions, there has been but temporary relief. It does give temporary relief. I also find that the reaction of cauterizing, especially with the galvano-cautery, in many cases causes inflammation of the surrounding parts, which we should not and do not wish to assail. In the method that has been demonstrated here by the use of this instrument, I would like to know if tissue is not destroyed, or how would he obtain the results we wish to obtain by the method of cauterization or reducing the hypertrophy. Then I would like to know about drainage. If he has destruction of tissue, what is he going to do about drainage? I have operated several hundred cases. Years ago I used the galvano-cautery. I have had an opportunity of looking after a number of cases for years, four, five, six, seven years, and in the majority of cases in which I have cauterized with acids and the galvano-cautery, the patients have returned for treatment later on. My method for the past two years is to reduce by operative procedure in the hypertrophic condition. In a few cases it is sufficient to simply reduce the hypertrophic tissues, but in the majority of cases I find it necessary with the hypertrophic tissue to remove a small portion of the bone. Three months later it would be difficult for any one to say it has been operated upon. You will find a normal mucous membrane and epithelium. As to hemorrhage, I have operated nearly three hundred cases, and have had one case of primary and two of secondary hemorrhage. To overcome hemorrhage I use a cotton tampon immersed in oil, and my experience that if the tampon is just large enough to not crowd or cause pressure, and thus irritate, that you will have no primary hemorrhage; and by leaving tampon from thirty to forty-eight hours and removing it as I shall demon-

strate, there will be no hemorrhage. I take gauze folded in this way, and keep folding until I get the required thickness, then I trim the four sides so as to have it in layers. I immerse this in alboline and place this in the cavity, and place it there with very little pressure with my forceps, and have it long enough to cover the entire surface which has been operated. When you go to remove it, remove the pieces with the forceps, the center layer first, then those next to the septum, leaving one or two layers of the gauze which may adhere to the operated surface, and the day following, or in two days, that will come away and you will have a nice surface. You have no possible chance of infection, and my experience has been from this operation very few patients will object to returning for an operation on the opposite side or on the septum or the nasopharyngeal space if necessary.

DR. JOS. BECK: I have used Dr. Pierce's method for about a year, in all about twenty-five cases and I have been watching them very closely. In regard to Dr. Goldstein's objection that he could not find the opening after he has made it to apply the chromic acid, I find that if I use a tampon with suprarenal capsule or adrenalin, I can see the opening and can introduce the probe with more ease than formerly. I can see a great advantage in the instrument and would be glad to know where it can be had. There is a method practiced in Kauffman's clinic in Prague. He makes reduction of the turbinated body with forceps. The forceps, which are sharp and are introduced into the opening and the sub-mucous tissues are crushed. When this instrument feels the bone of the turbinated body, he includes a certain amount of tissue and then crushes. I could not tell the results as I was only there three months, but this was the procedure. In regard to the posterior enlargement, it is true enough there is an atrophic condition of the mucous glands filled with secretion. Microscopical examination shows it to be a hypertrophy.

DR. BOYLAN: I simply want to inquire whether there occurs a sloughing after this operation.

DR. ANDREWS: I would like to ask how he regulates the amount of chromic acid he introduces.

DR. GOLDSTEIN (closing discussion): The very brisk and scientific discussion shows the vital importance of this matter, and while there is still considerable dissent on the subject, I believe we are on the eve of a better understanding.

Dr. Stein refers to the enormous hypertrophies which sometimes occur in the nose. I distinctly mentioned in the paper that the ma-

jority of our cases are not of this variety. The majority are the moderate hypertrophies, not of the extreme, dense variety, and these are the cases I have subjected to this operation. As to the direction of the introduction of the probe. The point is to get between the bone and the most dependent underlying vascular tissues. This technique is not applicable to cases of unusually large hypertrophy of the middle turbinal. Dr. Holinger evidently misunderstood the suggestion in my paper concerning the destruction of tissue. What I claim is done by the radical operation is that the physiologically, vital tissues are destroyed, while with this sub-mucous cauterization the tissue which is destroyed is of a character not to interfere with the subsequent natural function of the nose. The process which takes place with the application of chromic acid is the choking off of the vascular supply. You have as a result of the cauterization a mass of embryonal connective tissue which goes on to form a scar tissue, and if you have hugged the bone as closely as possible, your success is almost always assured.

Dr. Thompson asks how to prevent the acid destroying the instruments. I am more concerned for the patient; and if the acid destroys an instrument, I get another. These instruments may be obtained of the A. S. Aloe Company, 517 Olive street, St. Louis.

Answering the question of Dr. Boylan, I have not seen a single case of sloughing following cauterization with chromic acid. The regulation of the amount of the acid is by the size of the bead fused on the probe. I have a smaller trocar and probe for mild cases. Dr. Ballenger's suggestion as to the possibility of reaction of chromic acid on the renal organs should be considered and I think it is well to make a preliminary examination of the urine if there is any suspicion of an abnormal condition of the kidneys.

As to the gauze pack, I have used it in several layers, properly shaping it to the canal, and I do not think Dr. Knapp's suggestion to remove the dressing layer by layer will bear a practical test.

Why Dr. Loeb should doubt the freedom from bacterial infection in the introduction of a sharp, aseptic probe tipped with chromic acid, where the entire wound is only as large as the instrument, and where the secretions and air cannot come in contact with the area, I do not understand. A tunnel made directly into the tissues, protected by an antiseptic dressing, and where the material introduced is aseptic, and where with the withdrawal of the acid you seal the point of entrance will not become septic.

(To be continued.)

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- The Easiest, Quickest, Safest and Most Thorough Method of Removing the Third Tonsil.** LOUIS F. SAUTENBACH (Philadelphia). *Penn. Med. Journ.*, April, 1901.
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SELECTED ABSTRACTS.

Edited by

FAYETTE C. EWING, M.D., St. Louis,

with the collaboration of the

EDITORIAL STAFF.

A Case of Fracture of the Anterior Fossa of the Skull with Cerebro-Spinal Rhinorrhœa—F. C. LARKIN—*Liverp. Med.-Clic. Journ.*, July, 1900.

A man, aged twenty-one, in good health, met with a severe bicycle accident and was picked up unconscious and taken to Booth Hospital where he regained consciousness on the succeeding day. He was discharged from hospital three days after admission, and it was then noticed that a "tremendous quantity of water ran from his nose." Though he was able to resume work the next week he was much annoyed and hindered by the dropping from his nose, which was continuous during the day time and came from both nostrils. The fluid was perfectly clear and tasted "salty." When he stooped it would run for a few seconds, not in drops merely, but in a continuous stream.

About six weeks after the accident the flow stopped suddenly, and then he occasionally complained of frontal headache. But eight months after the accident he contracted influenza and developed symptoms of intracranial complications from which he succumbed a few days later. At the post mortem examination general purulent meningitis and a large abscess cavity in the left superior frontal region. Examination of the base of the skull revealed an old and extensive fracture in the fronto-sphenoidal region, communicating with the left antrum of Highmore, and thence with the nose, but there was no direct opening into the nose.

P. WATSON WILLIAMS.

Papilloma of the Vestibular Region of the Nose—BEALE—*Archiv. Ital. di Laryngologia*, April, 1900.

In the internal wall of the right nostril of the patient was a little formation of a bright red color having the clinical appearance of acuminate condyloma. The patient had suffered from acuminate condyloma in the *salvus balano-preputialis*. The microscopical examination demonstrated analogy in the anatomical structure for the papillæ development and for the epithelial elements, disposition and configuration.

Bacteria in the Normal Nose, and the Bactericidal Power of the Nasal Secretions—N. Y. N. SCHOUSBOE—Page 116, 1901.

1. The author concludes that with each inspiration is deposited within the nose numerous bacteria, an evidence of which is the fact that the expiratory air is sterile.

2. The larger quantity of germs in the inspired air are deposited in the cavities of the nose.

3. Within the limits of the nasal cavity proper, in its normal condition, there are found, as a rule, very few bacteria.

4. The nasal secretion seems to possess anti-bactericidal power.

5. This power is lost by warming up to 70°C., which causes the secretion to become turbid, and easily discharged in coagulous mass.

6. When the secretion is frozen, and after half an hour permitted to thaw in the higher temperature of a room it still retains its power to destroy bacteria.

GOTTLIEB KIAER.

Removal of Foreign Bodies from the Trachea—With Report of an Interesting Case—PAUL F. EVE (Nashville, Tenn.)—*Southern Practitioner*, May, 1900.

A girl of eleven years had inhaled a shawl-pin into her trachea. As intra-laryngeal efforts proved unsuccessful a tracheotomy was made with a view of removing the foreign body. During the operation, however, the patient developed severe symptoms of shock, and the operation was abandoned and a tracheal tube inserted. The third day after the operation, during a violent fit of coughing, one portion of the head was coughed up, swallowed and passed through the rectum the following morning. On the eighth day, during another fit of coughing, the other piece was coughed up, swallowed and passed the next morning through the rectum. The tracheal tube was removed on the tenth day and the opening allowed to heal.

W. SCHEPPEGRELL.

A Case of Disturbed Laryngeal Innervation of Bulbar Origin—STRAZZA—*Archiv. It. di. Otologia*, 1901.

The patient having suffered from a syphilitic infection for some years began to manifest alteration in the voice, difficulty in swallowing and a tendency for the food to go through the nose. There was entire absence of any sign of disorder of innervation of the pneumogastricum; there was presence of paralytical phenomena and notable atrophy in the muscles trapezius and sterno-cleido-mastoideus of the right side, which correspond to the field of distribution of the external branch of the spinalis. There was palsy in the right side of the *palatum molle* and of the superior *musculi pharyngei* which corresponded to the internal branch of the spinalis. Finally there was hemiplegia of the right side of the larynx. This demonstrates the fact that the fibrillæ which enter into the constitution of the recurrent are dependent upon the bulbar nucleus of the spinalis.

COLLINA.

A Further Note on the Production of Local Anesthesia in the Ear, Nose and Throat—ALBERT A. GRAY—*The Lancet*, March 9, 1901.

In *The Lancet* of April 21; 1900, p. 1125, the author described a method by means of which the difficulty of obtaining local anesthesia in the ear could be overcome. It consisted essentially in using a solution of cocaine in anilin oil and rectified spirit. As the method has been widely adopted both in this country and abroad, he describes some little improvements which allow the limits of the application to be considerably widened.

In regard to the physiological effects of this method a few words are required. He has not had any trouble himself with symptoms of intoxication, either by the anilin or by the cocaine, but has heard of two cases in which a little trouble resulted. One of these was a case evidently of cocaine intoxication, and the patient recovered in the course of an hour or two. The second case occurred in a patient aged six years. The solution was instilled into the meatus until the latter was full. In the course of an hour or so the patient's lips became blue, and slight gastric catarrh occurred, but no other symptoms were present, and the patient was well again in a few hours. As a matter of fact, beyond the peculiar blue color of the lips, there was nothing alarming to note. Excepting these cases, neither of which occurred in his own practice, he has not seen or heard of any trouble with the solution.

A few words may be said in regard to the peculiar blue color of the lips which sometimes occurs. Several of his patients have told him that an hour or two after the use of the solution their friends noticed this peculiar color. No symptoms were present in any of the cases, and the patients would not have known about it had their attention not been drawn to it by their friends. It always passes off in the course of a few hours, and leaves no effects. This is due to the transformation of oxyhemoglobin into methemoglobin. Its occurrence may be avoided, if so desired, by limiting the dose to 20 minims for adults or adolescents and corresponding doses for children. As regards children, it must be remembered that they are said to stand cocaine badly.

(*Note by Abstractor.*—Compare the observation of cyanosis and acute cardiac dilatation from the aural use of anilin oil reported by myself in *The Lancet*, April 20, 1901). STCLAIR THOMSON.

Rhinoliths Associated with Mucous Polypus of the Nose—ASCENSO—*Arch. Ital. di Otologia*, 1901.

A peasant, aged twenty-two, for two years complained of obstruction of the left nostril. The author removed a rhinolith as big as a walnut, composed of lime carbonates and phosphates, friable and containing a nucleus formed by a leaf turned upon itself. There were also two polypus with thin peduncle. COLLINA.

Bacteriological Researches on the Middle Ear in the Normal Conditions—CITELLI—*Arch. Ital. di Otologia*.

The presence of micro-organisms in the normal *cavum tympani* is still mooted. The author has made some researches, upon both ears, of fifteen dogs and five rabbits. In eleven dogs and four rabbits the result was negative, and in the other five cases there was a very limited development of microbic colonies. This fact demonstrates that organs, anatomically and physiologically considered as especially designed for the protection of the *cavum tympani*, are not sufficient to the accomplishment of this end in all cases. As demonstrative of this fact, the author made a second series of experiments. He introduced cultures of different pathogenical micro-organisms in the *cavum pharyngo nasale* of dogs and of rabbits, and in a few hours after having killed the animals, found that the micro-organisms had arrived through the tuba Eustachii to the *cavum tympani*. He concludes that in normal conditions in the *cavum tympani* there are no micro-organisms or only very few with the possibilities of development; that the tuba Eustachii in normal conditions cannot entirely prevent the penetration of micro-organisms from the *cavum pharyngo nasale* in the tympanum. COLLINA.

Labyrinthitis from Parotitis—GRADENIGO—*Arch. Ital. di Otologie*, 1901.

The author briefly illustrates two cases of this rare and serious complication of parotitis. The first case was a child six years old who fell ill of a mild parotitis. During the night, between the fourth and fifth day, when the fever had apparently disappeared, the patient became quite deaf. Examination of the ears, nose and throat was negative. The bodily equilibrium was not disturbed with the eyes open, but when closed the standing position was maintained with difficulty, and upon one foot impossible. There was no emesis. All treatment proved unavailing.

The second case was that of a young man twenty-one years old. He also had a mild parotitis, succeeded by orchitis. After ten or twelve days, when he had seemingly recovered, he noticed a tinkling in the right ear. At the examination of this ear the membrana tympani was apparently normal in color and mobility. No acoustical perception was demonstrable. COLLINA.

Some Notes on Antitoxin, Diphtheria and Streptococcus—C. M.

SEBASTIAN (Martin, Tenn)—*Memphis Med. Monthly*, May, 1901.

The clinical history of nine cases in which the antistreptococcic serum was successfully used. While the cases described refer to erysipelas and puerperal infection, still it illustrates the value of the antistreptococcic serum and shows its potential value in cases of diphtheria in which there is also an antistreptococcic infection. These cases are of special interest as the cases heretofore reported of the use of the antistreptococcic serum have not been of an encouraging character. W. SCHEPPEGRELL.

On the Question of the Advisability of Ligaturing the Jugular Vein in the Treatment of Sigmoid-Sinus Thrombosis—J.

LACY FIRTH—*Bristol Medico-Chirurgical Journal*, March, 1901.

A case in which the sinuses were probably thrombosed. The jugular vein was not ligatured, and, though recovery ensued, pyemic complications developed, which the author believes might have been prevented by ligature of the vein. While stating reasons for avoiding the more extended operation where unnecessary, he reports this case to show that omission to ligature may be hazardous treatment in sinus thrombosis.

If the jugular vein itself has become infected, and contains disintegrating thrombus, the wisdom of applying a ligature below the thrombus admits of no question. But the fact that many cases of sinus-thrombosis have recovered satisfactorily without ligature of the vein raises the practical question: Are there any signs or symptoms by which the surgeon called upon to treat these cases can decide, either when operating or before, whether it is safe or unsafe to leave the jugular vein untouched? From the pathological point of view it is obvious that nothing will be gained by ligaturing the jugular—firstly, if every particle of septic thrombotic material likely to pass from the sinus to the vein has been or can be removed through an opening made into the sinus itself; and, secondly, if the lumen of the jugular vein is blocked by firm clots, which can act like a ligature, if that clot can be saved from disintegration by removing the septic material lying in the sinus above it as just described.

This question of the advisability of tying the jugular as a routine step in the treatment of sigmoid-sinus thrombosis can only be settled by a careful study of recorded cases.

In the author's opinion, a study of the records quoted goes far to show that ligature of the jugular vein in sigmoid-sinus thrombosis need not, in many cases, be regarded as an essential part of the operation, and that it will usually be better practice not to ligate the vein in cases operated upon before embolic abscesses have formed, if a free flow of blood can be established from both ends of the sinus by removal of the thrombi, or if firm, healthy-looking clot is found plugging the sinus at the lower end, or at both ends.

P. WATSON WILLIAMS.

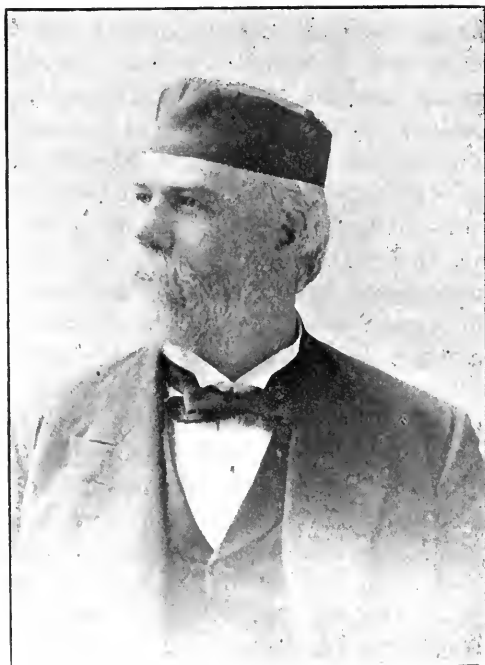
Papilloma of the Larynx in Children and their Treatment—

MONSELLES—*Archiv. Ital. di Otologia*, first, 1901.

The author thinks the pathogeny of the affection may be determined by some micro-organism, at present unknown. For the extirpation of this papilloma, he advised and used with success, a special abrador, consisting of a small metallic cylinder. It has on one side an oval hole with sharp borders. This cylinder is mounted on a staff so that it can be inserted in the larynx after the manner of intubation. At the opportune moment the papilloma is pulled off by the sharp border of the oval hole, and fall in the interior of the cylinder.

OBITUARY.

Dr. Thomas Frazier Rumbold, of St. Louis, died May 23, 1901. Dr. Rumbold was a direct descendant of Capt. Richard Rumbold of the Ryehouse, near London, England. In 1834 his father emigrated to Canada, coming to the United States in 1837.



The subject of this sketch was educated in the private schools of Davenport, Iowa, and like most distinguished Americans, his early years were years of deprivation and endeavor. In the years from 1846 to 1848 he taught school for the pitiful sum of \$12.00 per month, and with the hardihood of his Scotch ancestry man-

aged from this small allowance to maintain himself and pay his tuition in the Iowa College. While a student here he began reading medicine under the direction of Dr. Jas. White, and a little later commenced practice with the idea of acquiring his diploma later. By 1859 he had saved enough to enable him to enter the Jefferson Medical College of Philadelphia, where he received the degree of M. D. in 1862. Immediately after graduation the young physician enlisted in the medical service of the United States Army, and served at the battle of Pittsburgh Landing, Tenn. He was in the government service at the United States General Hospital and the Jefferson Barracks, St. Louis, through the succeeding years of the war.

Dr. Rumbold was the first practitioner in the United States to confine himself to the practice of the ear, nose and throat. His special interest in them was coincident with his early studies of medicine and continued through his college life, during which by the courtesy of the late Dr. Samuel D. Gross, he was accorded the privilege of the daily examination of patients afflicted with diseases of the nasal passages, in the Blockley Hospital. In 1865 he resigned the position of Acting Assistant Surgeon of the United States Army and continued his special study of the ear, nose and throat with Drs. Henry D. Noyes and Louis Elsberg in the New York Ophthalmic Hospital.

Dr. Rumbold opened an office in St. Louis in 1866, limiting his practice to rhinology, laryngology and otology, where he practiced continuously until stricken by mortal disease, with the exception of a few years from 1890, when he had a temporary residence in San Francisco for the benefit of his health.

Dr. Rumbold was a member of many medical societies and had held many honorable positions in the gift of the medical profession as a teacher. He wrote many papers in the course of his long and honorable career, and for a number of years was editor and proprietor of the *St. Louis Medical and Surgical Journal*. Within the last year he read a series of interesting papers before the St. Louis Medical Society entitled, "Fifty Years of the Practice of Rhinology."

The principles of soothing applications to inflamed membranes which he evolved in rhino-laryngology will stand the test of time, and if his life work were written, in this alone his name would deserve to live. He was a mechanical genius, and with this idea in mind, he devised his spray producers for the treatment of the entire surface of the nasal passages and throat with warm, medi-

cated vaseline, which applications, as applied by him, are not only the least irritant and most thorough to the Schneiderian membrane, but are more abiding and protective than any heretofore developed.

In 1880 Dr. Rumbold published a work on "Hygienic and Sanative Measures for Chronic Catarrhal Inflammation of the Nose, Throat and Ear." In 1885, a work on Pruritic Rhinitis (Hay Fever); Its Medical and Surgical Treatment." In 1881, a work on the "Hygienic Treatment of Nasal Catarrh." Among the many instruments which he devised, we may mention the Hinged Pharyngeal Mirror, the Tongue Depressor with three blades, the Flexible Eustachian Catheter and the Spray Controller.

Dr. Rumbold left six children, all of more than ordinary talent, and one of which (Dr. Frank M. Rumbold) with its present editor, was the joint founder of THE LARYNGOSCOPE.

Upon a marble slab, over the mortal remains of a distinguished worker, in the crypt of St. Paul's Cathedral, London, is a short line fitting to be carved over the last resting place of him whom we mourn—for Thomas Frazier Rumbold.

"DIED AT HIS WORK."

F. C. E.

BOOK REVIEWS.

Progressive Medicine, Vol. I, March, 1901. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 460 pages, with 81 engravings and one full-page plate. Lea Brothers & Co., Philadelphia and New York. Issued quarterly. Price, \$10.00 per year.

Volume I of the 1901 series of "Progressive Medicine" contains much information of value to the laryngologist and otologist. In the introductory monograph by Dr. J. C. DaCosta on "Goitre and Exophthalmic Goitre," the literature on the subject is considered succinctly. In the same chapter are several interesting descriptions of operative technique used in reconstructing the upper lip after the removal of cancer and lupus, and plastic operations on the nose subsequent to fractures of the nasal bones. Rhino-plastic operations are interestingly considered and also the latest technique of operations for cleft-palate.

The chapter on diphtheria again brings the question of antitoxin to notice viewed in the light of several years' experience. In the therapy of whooping cough a number of new suggestions are presented.

We are again pleased to note a separate chapter on laryngology, rhinology and otology; that on laryngology and rhinology is by Dr. A. Logan Turner, of Edinburgh, and that of otology by Dr. R. L. Randolph, of Baltimore. Dr. Turner brings the literature of tuberculosis of the nose and throat up-to-date. The bacteriology and inflammation of the nasal accessory sinuses receives much attention, as does also lavage of the maxillary sinus.* The treatment of chronic suppuration of the frontal sinus is a continuation of the chapters on this subject in "Progressive Medicine," Volume I, 1900.

Malignant diseases of the larynx is a well written chapter by the same author.

The section on otology contains reports of numerous rare clinical cases and a consideration of the middle ear. Stress is laid on local blood-letting and cold applications in the treatment of acute inflammations. The technique of vibratory massage is again noticed. The author points to the conservatism now prevalent in the surgical treatment of chronic, non-suppurative catarrhal otitis.

The recent contribution of Dr. A. A. Gray, of Glasgow, of aniline as a penetrative reagent to be combined with alcohol and cocaine as a local anesthetic in the ear is mentioned in extenso.

The education of the deaf-mute by the system suggested by Urbantschitsch still awakens active interest and forms the concluding chapter of this section.

M. A. G.

Beitraege zu den Funktionsuntersuchungen an Taubstummen in Danmark. Monograph by E. SCHMIEGELOW, Copenhagen. Paper bound. Pages, 113; illustrations, thirteen. Publishers, Det Nordiske Forlag, Ernst Bojesen, Copenhagen; August Hirschwald, Berlin.

In this monograph the author contributes some interesting data concerning the question of deaf-mutism in Scandinavia. The author also comments on the advantages of dividing the pupils into classes according to the degree of deafness. He urges the formation of separate classes where only tone perception is apparent in order that these pupils may receive the advantage of special instruction. This monograph was originally prepared in the Danish language and translated into the German.

M. A. G.

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DEVOTED TO DISEASES OF THE

NOSE-THROAT-EAR

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ANNOUNCEMENT.

The appearance of this issue marks the fifth anniversary of THE LARYNGOSCOPE in the field of medical journalism.

By strictly maintaining our policy to co-operate in the interests of progressive laryngology, rhinology and otology with the active literary workers at home and abroad, we feel that a permanent place has been established for our journal.

We are happy to again express our thanks and appreciation for the valuable services of our efficient editorial staff and collaborators, whose good work has so materially aided us in the many editorial difficulties arising in the conduct of the journal; to our many contributors whose original work has done so much to maintain a high literary standard; to our subscribers in every part of the world, the advance guard of progressive medicine, whose moral and financial support has enabled us to improve and strengthen our journal; to our advertising patrons who have recognized the influence and value of THE LARYNGOSCOPE as a legitimate medium to introduce their instruments and preparations to this class of the profession.

Original Communications.

It shall be our endeavor to exercise a stricter supervision of our Department of Original Communications, as the character of this department is mainly responsible for the tone and literary standard of the journal. Our policy that "*original communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE*" will be rigidly observed.

Society Proceedings.

Much attention has been devoted to the improvement of this department, and we are now in a position to furnish our readers regularly, carefully reported proceedings of the Section on Laryngology and Rhinology of the New York Academy of Medicine, the London Laryngological Society, Berliner Laryngologische und Otologische Gesellschaft and the Societe Francaise d'Otologie, de Laryngologie et de Rhinologie. In addition to these frequently reported proceedings, we will also publish the proceedings of the various national and international special societies and sections in rhinology, laryngology and otology.

Bibliography.

Our most recent addition, the Bibliography Department, has proven a very acceptable feature. The good work of our editors and correspondents, and the resources of libraries and exchanges, have enabled us to make good our claim to publish a *complete* bibliography of laryngological, rhinological and otological literature. To medical writers and our contributors this department will soon prove to be invaluable as a practical working reference.

Abstracts.

Since the appearance of our Bibliography, the Department of Abstracts has been so modified that our staff now prepare abstracts only of papers and monographs of more than usual interest.

Briefly and simply, this constitutes the make-up of THE LARYNGOSCOPE to-day after it has passed through the formative stage. We believe that our foundation has been carefully constructed, and with the further co-operation of the many builders engaged with us, we hope to erect a substantial edifice, dedicated to the highest interests of progressive laryngology, rhinology and otology.

Among the innovations which we have arranged for the new volume, special mention must be made of the carefully prepared manuscript of Dr. Jonathan Wright, of Brooklyn, entitled, "The Nose and Throat in the History of Medicine." In his inimitable and graceful style, Dr. Wright will present a series of papers, published in successive numbers of THE LARYNGOSCOPE, in which these interesting historical data will be considered from the earliest periods to the present time. In his preface on the following page the author outlines the scope of his work, and we are pleased to have the opportunity of presenting this interesting and valuable history.

THE EDITOR.

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

PREFACE.

A few words may not be amiss in the way of preface to this history of the development of our knowledge of the nose and throat. No one can have engaged in any such laborious task as this without being painfully conscious at the last of the liability, nay, the probability that many errors of omission and commission will be noted by others in one's work. For these I can only solicit the reader's charity.

An attempt has been made to link together the story of the records of the nose and throat in medicine with the general drift of medical history, with the salient features in the early history of the civilization of mankind and with the general literature which has a bearing upon the central subject of the work; for, as Huxley has said: "Science and literature are not two things, but two sides of one thing." This has been done in constant fear of rendering my story too verbose and pedantic, but with the earnest hope of riveting the attention of the reader in a way which can not be attained in the routine preparation of an encyclopedia or a dictionary. I have also ventured to hope that the information thus laboriously offered will not, on account of its form, prove less accurate or extended because an attempt has been made to make it more attractive. If I have failed in realizing these ideals—and who ever fully succeeds?—I may comfort myself with the reflection that the labor expended in an attempt to attain them has been fully repaid by my pleasure in the work itself.

In the preparation of this work I have taken my notes chiefly from the original sources. In addition I have made use of many historical works both of medicine and of general literature. Among the former those of Sprengel (the French edition of his history), Baas (in English translation), Whittington, and especially Gordon Holmes' "History of the Progress of Laryngology," (*Med. Press and Circular*, July 15, seq. 1885), and Heyman's "Geschichte der Laryngologie und Rhinologie" in his "Handbuch;" among the latter those of Buckle, Guizot, Freeman, Draper, Lecky, Gibbon, Grote, Ranke, Prescott, Renan, and many others have been systematically read during the course of my work.

The space of a preface would not suffice for acknowledgment of indebtedness to all the works consulted.

INTRODUCTION.

In every age there have been attempts to draw from the appearance of the countenance, especially from the shape and size of the nose, prognostications as to the mental and physical attributes of men; but although many are the rules laid down for the guidance of observers, they are of little value; for while doubtless the features tell their story to us occasionally, if we are close observers, in spite even of the modern and scientific treatises of Bell and of Darwin, the expressions are too fugacious and elusive to allow us to gather from them any reliable data as to the characteristics of the individual.

Physiognomy
of the Nose.

No longer ago than 1820 we find it stated in a scientific work* that "a long and pointed nose passes for a sign of sagacity. A short and blunt nose marks a simplicity of mind, easy to deceive and with very little foresight. A little nose, thin and movable, denotes a natural mocker. Large noses are an indication of heaviness, for they bespeak the lymphatic nature of the complexion. Twisted noses, they say, are a sign of an obliquity of mind; but an aquiline nose, large and muscular, announces force and courage; a flattened nose an inclination to luxury; in fact, it is thought there is a correspondence between the sexual organ and that part of the countenance."

"Nascitur ex labiis quantum sit virginis antrum
Nascitur ex naso quanta sit hasta viri."

This is not a quotation drawn from a literature especially tainted with the ideas of Lavater.

On the testimony of Plutarch we learn that the Persians most admired the hawk-nosed type of man as resembling Cyrus, their best beloved king. This saying we find echoed in the sixteenth century by Riolan† and Laurentius‡, the latter declaring, with how much truth I do not know, that the Egyptians in their hieroglyphs use the figure of a nose to designate a man. We may plainly see the type of Cyrus in Bellini's portrait of the Sultan Mohammed§. We learn from the Old Testament (Levit. XXI, 18) that there was a prejudice among the Patriarchs against flat-nosed people.

But in spite of these predilections of the Caucasian race we find among the native negroes and the Chinese different ideals as to the beauty of the nose. "The ancient Huns during the age of Attila

* "Dict. des Sciences Medicales," Vol. XXXXII, P. 220.

† "Opera Omnia," 1610, Cap. LIII. De Naso.

‡ "L'Histoire Anatomique" Traduit, par Size, P. 1374; Ed. 1610.

§ This may be conveniently referred to in Mrs. Oliphant's "Makers of Venice."

were accustomed to flatten the noses of their infants with bandages for the sake of exaggerating a natural conformation. With the Tahitians to be called long-nosed is an insult and they compress the noses and foreheads of their children for the sake of beauty. So it is with the Malays of Sumatra, the Hottentots, certain negroes and the natives of Brazil.”*

In attempting to present an outline of the growth of our knowledge of the nose and throat and of their diseases, it must be remembered that a complete and intelligent review of the subject can not be obtained by beginning our study with the discovery or rather with the introduction of the use of the laryngoscope. That would be a consideration of the history of laryngoscopy and its sequelæ in the history of the diseases of the upper-air tract, and of the growth and development of technical skill. However great may have been the revolution wrought by Türck and Czermak in this field, the history of rhinology and laryngology begins not with the invention of the speculum and the laryngeal mirror, but with the earliest records of the civilization of man. In fact, it is reasonable to conjecture that it is only the lack of records which prevents us from tracing knowledge of the diseases of the nose and throat still further back into prehistoric times. It must necessarily be that any disease of the respiratory system causing obstructive dyspnea, or any affections causing deformity and discharge from the nose, would have attracted the attention of the medicine men of our primeval ancestors. Injuries to the head must, as frequently then as now, have involved the nasal organ. Indeed, we shall find in the very earliest Hindu and Greek records evidences of the care and attention devoted to the study of this branch of the medical art. We shall also find that to some extent the nose and nasal disease in the earliest times possessed proportionately a larger interest for medical men than it did in more recent and more enlightened times, until the beginning of the growth of what we are pleased to call Modern Rhinology. Exposed to accidental and intentional injury in the sports and wars of the ancients, mutilated by the deliberate acts of a cruel justice before the days of jails, or in the fierce outbursts of passion and revenge, traumatic conditions of the nose have occupied necessarily not only a very large place in the medical literature, but in the secular writings of former civilizations:

* Darwin's "Descent of Man," Part III, Chap. XIX.

"Atque hic Priamiden laniatum corpore toto
Deiphobum vidit, lacerum crudeliter ora,
Ora manusque ambas, populataque tempora raptis
Auribus et truncas inhoneste volnere naris."

—VIRGIL, *Aeneis* VI, 494.

Innumerable colloquial phrases in all known tongues still testify to its importance as a symbolical figure of speech.

Etymology of
Nose.

It would seem that the remarkable coincidence, pointed out by Hvorka*, that the word "nose" has the same stem in all known European languages, might be explained, as he suggests, on phonetic principles, and it is very likely that the nasal resonance of the "n" followed by a vowel has had an influence in preserving the stem from radical changes, but it is difficult to see why, on this ground, the sibilant "s" should enter almost universally into the word. The following is the list of languages quoted by Hvorka in a little different sequence, with the accompanying word for nose:

Sanskrit	Nās	Danish	Noesen
Old Indian	Nāśā	Netherland	Neeus
Old Persian	Nāna	Modern German	Nase
Zendic	Nāonha	Old Slavonic	Nosz
Hebraic	Nohar	Old Bulgaric	Nosū
Greek	ρῑς	Old Prussian	Nozy
Latin	Nasus	Lithuanian	Nosis
Italian	Naso	Lettic	Nasis
Spanish	Nariz	Bohemian	Nos
French	Nez	Polish	Nos
Gothic	Nasa	Polabian	Nūs
Old Norse	Nös	Upper and Lower Sorbian	Nos
Old German	Nasa	Russian	Nos
Middle German	Nase	Servian	Nos
Anglo-Saxon	Nose	Croatian	Nos
English	Nose	Slovenic	Nos
Swedish	Näsan		

It thus seems evident that there has been a direct transmission from the ancient Sanskrit of the word nose to the modern languages of Europe, one of the innumerable etymological evidences of the origin of our branch of the human race. If we look at a photograph of a miscellaneous group of natives of Calcutta or Bombay, and then glance out of the window at the pedestrians along Broadway or the Strand, we will note that not only the word has been transmitted, but the characteristics of the feature for which it stands.

It may not be without interest in this connection to supplement Hvorka's investigations by examining other languages having no known affiliation with the so-called Aryan stock:

* Hvorka: "Die Aeussere Nase." 1893.

Chinese	Pe
Japanese.....	Hana
Congolese (Africa).....	Djolo
Mexican (Nahante).....	Yacatl

SOUTH AMERICAN INDIANS.

Aymara.....	Nasa
Moxas	Nusiri
Incas (Quichua)	Seneca

NORTH AMERICAN INDIANS.

Cree.....	Miskiwan
Lenape (Delaware)	Wikiwan
Onondaga	Onionchia
Chinook	Bekats
Clallam (Wash. Territory).....	Nuk'su

A number of vocabularies of other North American languages show no such conformity as the European languages. There is, however, as will be seen, a suggestion of a common derivation of the word even as between the tongues of the three continents (Europe, Asia, America), but it would lead us too far astray to pursue the question further. It will be noted that the persistence of the nasal "n" and the sibilant "s" is not so marked in the languages of the non-Aryan races of the world.

THE NOSE AND THROAT IN MEDICAL HISTORY.

EGYPTIAN MEDICINE.



IN a volume published from the unfinished manuscript of A. Mariette Bey, entitled "Les Mastabas de l'Ancienne Empire,"* among many others is a fac-simile of a drawing on a slab found in the tombs of one of the old Egyptian kings. The grave in which the slab was found is said to date back to the fifth dynasty, a matter of 3500 years before the birth of Christ. On the slab is the delineation of a physician and his wife with her hand resting affectionately on his shoulder.

He was the medical attendant of King Sahura and his name was Sekhet'enanch, but what the name of his wife was does not appear. It is said to have been everywhere erased from the tablets. What subsequent domestic infelicity this may hint at does not appear. Edward Meyer in his "Geschichte des Alten Ægyptens" (II, P. 95) translates some of the

The First Physician.

* On Plate D 12.

inscription relating to the physician in such a manner that it appears the king had ordered it to be engraved as a testimony of gratitude to his doctor because he had "made his nostrils well." He wishes him, therefore, long life and happiness. This tablet had formerly been set up in the king's palace in an ante-room where all might see and read. We see hereby not only the antiquity of medicine, but also the antiquity of certain propensities which have not yet disappeared, so the uncharitable say, from the activities of its devotees; for we read further in Meyer's text that this method of recompense was suggested to the king by Sekhet'enanch himself. Truly "Vita brevis, ars longa." However, it does not appear that this early practitioner of medicine and violator of medical ethics was necessarily a rhinologist, for the word "nose" in this place, according to the translator, seems to have signified "breath of life." This, of course, makes the meaning of the passage very indefinite. It is an indication, however, that five thousand years ago they recognized the nose as belonging to the respiratory system, a fact to which it has frequently been necessary to draw attention in later, and we are fain to believe more enlightened times. Voltolini* has quoted Moses for authority (Genesis II, 6), that the nose was recognized as an organ of the respiratory apparatus when the "Lord God formed man of the dust of the ground and breathed into his nostrils the breath of life."

This reference and several others in the Sacred Writings point directly to the nostrils as emblematical of life and of the soul. It is not at all improbable that this figure of speech had its origin in Egypt where the nostrils were the route by which the contents of the cerebral cavity were extracted in the more expensive methods of the universal practice of embalming the dead. The exodus of the people of Israel from Egypt is said to have taken place at a date subsequent to that ascribed to the compilation of the "Papyros Ebers" (1550 B. C.) As to the possibility of Sekhet'enanch having really been a rhinologist we are supported only by a single historical reference. Herodotus (II, 84) makes a very positive statement as to specialization in Egyptian medicine, but makes no reference to rhinology, unless we suppose reference to the head to include affections of the nose and throat. The passage reads in Rawlinson's Translation (Vol. II, P. 136) thus: "Medicine is practiced among them on a plan of separation; each physician treats a single disease and no more; thus the country swarms with

Specialists in
Egypt.

* "Die Krankheiten der Nase," 1888.

medical practitioners, some undertaking to cure diseases of the eye, others of the head, others again of the teeth, others of the intestines, and some those which are not local." "ἡ δὲ ἱητρικὴ κατὰ τὰδε σφ δέδασται μῆς νούσου ἕκαστος ἱητρός ἐστι καὶ οὐ πλεόνων. πάντα δ' ἱητρῶν ἐστι πλέα· οἱ μὲν γὰρ οφθαλμῶν ἱητροὶ κατεστᾶσι, οἱ δὲ κεφαλῆς, οἱ δὲ ὀδόντων, οἱ δὲ τῶν κατὰ νηδύν, οἱ δὲ τῶν ἀφανέων νούσων."

Maspero* and Erman† are both inclined to believe that Herodotus somewhat exaggerated the extent to which the specialization of medicine was carried in ancient Egypt, but Montaigne, that garrulous and delightful old French classic, not only credited the statement of Herodotus but approved of it, for he says:‡ "The Egyptians were right in neglecting the general calling of physician and of dividing the profession; for each illness, for each part of the body, there was an attendant, and therefore each part was more skillfully and less blindly treated, because they studied each one specially."

It has been conjectured that this specialization of medicine in Egypt, when at the height of her civilization, was due to the same causes which have produced it to-day. The teeming population, in the fertile, irrigated valley of the Nile, dwelt largely in cities§ and these enormous aggregations of population, which is the striking phenomenon of modern civilization, furnish the only conditions under which such subdivision of the arts and sciences is possible. The whole matter, however, resting as it does upon this passage in Herodotus, is involved in much doubt and uncertainty. ¶

* Maspero: "Dawn of Civilization."

† Erman: "Life in Ancient Egypt."

‡ Montaigne: *Essais*, Livre II, Cap. XXXVII.

§ Egypt in the time of Herodotus contained from eighteen to twenty thousand cities. Under the successors of Alexander it is said to have contained thirty thousand towns. (Baas.) There were so many physicians in Egypt that Homer declared, perhaps as an early instance of poetic license, they were all physicians.

¶ The statement by Von Klein (*Journ. Amer. Med. Association*, December 18, 1886), that Cyrus, the Persian King, sent to Egypt for a rhinologist to relieve him of a nasal polypus, is not to be found in Herodotus, Xenophon or Strabo, nor in any modern work on Antiquities of Ancient Egypt at my disposal, although I have not only carefully searched his references, but many others, modern and ancient, for a record of the fact. Since in quoting Herodotus he adds "nose" after "head" to the historians' category of special fields of medical practice and states that the most skillful operators were those who learned anatomy by practice in pulling the brain out of the nose in the process of embalming, he seems to have possessed sources of information in our time not accessible to Herodotus in his, as to Egyptian medicine. It is misleading, however, and embarrassing to other historians to insert such information in what is apparently a quotation. Cyrus sent for an eye doctor out of Egypt (Herod. III, 1) and Darius (Ibid. III, 129) made use of one of his captives, the Greek physician Democedes, to cure him of a sprain, but there is no mention of a nose doctor which I can find. Democedes, by the way, was the first physician of whose life and adventures we have a trustworthy record, and his romantic and interesting story is graphically told by the Father of History. He lived 490-430 years before Christ, and was paid fabulous prices for his services not only by the Persian King but by his countrymen.

The "Papyrus
Ebers."

Whether these old Egyptians had specialists or not, it is evident from the "Papyrus Ebers" that they had physicians who observed and knew how to treat diseases of the nose and throat after a fashion. This "Papyrus" is the earliest of all books on medicine and is said to have been compiled about 1550 years before Christ*, but even the date of its compilation is somewhat conjectural, while that of its origin is wholly so. It is supposed by some to be merely a book on pharmacology, but as its learned translator† has stated, it is more than that, for near the end it deals with anatomy, physiology, pathology and surgery. In spite of the practice of embalming, anatomy was evidently largely a matter of fancy with these early doctors, and gave no promise of the great development which the Greeks under the Ptolomies, in the future city of Alexandria, a thousand years later, were to bring about in it. We read, page 181, "There are four vessels in both nostrils of which two carry blood and two carry mucus." In physiology they were scarcely less at sea, for when the air once entered the nose they lost track of it. "It goes to the heart and the rectum," says the author of the "Papyrus," a few lines further on. It is evident that tumors of the neck, both tubercular glands and goitre, were well known and as little understood. It must be remembered, however, that the translation is often uncertain and that it is impossible for us to comprehend exactly what they meant even when the equivalents of their hieroglyphics are selected in the modern languages. "If thou findest in his throat a fatty tumor (?) and it appears like an abscess of the flesh, which can be reached by the fingers, thou must say thereto, 'he has a fatty tumor in his throat; I will treat the disease with a knife, taking care of the (blood) vessels.'" They were apparently very chary of surgical procedures, and even in this place it is uncertain from the translation whether the author does not really give preference to ointments and cataplasms, for which he gives a number of scarcely recognizable prescriptions.

We will find in the "Zend Avesta" that the surgeon must first thrice essay his skill upon a slave or a lower caste of man before operating on their betters. Let us think of our hospitals and dispensaries and refrain from unkind criticism. If they neglected to do this they operated at the peril of their lives on the high caste man. Such a penalty was calculated to encourage conservatism if it obtained in old Egypt as well as in Chaldea.

* Moses brought Israel out of Egypt 1300 years before Christ, and hence, according to these computations, 250 years after the compilation of the "Papyrus Ebers."

† Dr. Med. H. Joachim, Berlin, 1890.

CHALDEAN MEDICINE.

Closely allied with Egyptian civilization was that of the Chaldeans and the Assyrians, but scarcely any notice has come down to us of their medical attainments beyond the records of magic, * the incantations and the invocations of good and evil spirits, which would indicate that our art among them was about on a level with that of the American Indians. In the satires of Juvenal we find Chaldean magic much cultivated by the decadent social world of Rome against which he aimed his shafts.

"Chaldeis sed major erit fiducia; quicquid
Dixerat astrologus, credent a fonte relatum
Hammonis." (VI. 552.)

In the popularity of theosophy and the mind cure and the faith cure we have in our day a parallel to the condition at Rome so far as the mystic influences of the Far East are concerned.

It is impossible for us to stretch our credulity to the point of believing Herodotus when he asserts that the Babylonians had no physicians, but depended on the wisdom of the market place, where the patients were exposed for the benefit of the comments of passers-by. Familiarity with human nature compels us to believe that even if they possessed no medical knowledge they must have possessed men who pretended to it, and others who believed in their assertions, for as Celsus remarked, "*Medicina nusquam non est.*"

According to Sayce (Hibbert Lectures, 1887, P. 84,) dog's flesh and the ordure of animals were among Chaldean medicaments, and such things we find in abundance in the "Papyros Ebers." These disgusting drugs we will again find recommended in the works of Galen, Ætius and Oribasius, among those prescribed internally and even for internal local applications in throat disease. We can perhaps therefore understand Juvenal's objections to the Chaldeans, and we may see from his mention how these articles crept into the later medical writings of the Roman Empire and subsequently appeared among the drugs of the Middle Ages, thus transferred from the Plains of Mesopotamia to the banks of the Rhine and the Thames. The belief in the efficacy of precious stones as medicaments is first found in the accounts of Babylonian medicine and existed far into the Renaissance as costly articles of the Pharmacopœia.

* Some one paraphrasing Pliny has said: "Magic was the offspring of medicine, and after having fortified itself with the shield of Astrology it borrowed all its splendor and authority from religion." See Pliny: Hist. Nat. Lib., XXX, Cap. 1—2.

Witch Medi-
cine.

Mysterious invocations, gruesome and disgusting prescriptions occupy a prominent place in all records of primitive medicine, but apparently these with the cabalistic use of figures and signs have long lingered in the records of medicine and in literature as the heirlooms of Chaldean sorcery. The Faust legend* is full of them. The Walpurgisnacht in Goethe's "Faust" has a distinctly Chaldean flavor, not pleasant but weird. We recall the dark cave in "Macbeth," where the witches' prescription is compounded:

"Fillet of a fenny snake
In the cauldron boil and bake;
Eye of newt and toe of frog,
Wool of bat and tongue of dog,
Adder's fork and blind worm's sting,
Lizard's leg and owlet's wing."

The same Chaldean prescription is found in Horace, where the foul witch Canidea orders:

"Et uncta turpis ova ranæ sanguine
Plumamque nocturnæ strigis,
Herbasque quas Iolcos atque Hiberia
Mittit venenorum ferax,
Et ossa ab ore rapta jejunæ canis
Flammis aduri Colchicis."

—HORATII FLACCI EPODON, Liber 5, V. 19 Seq.

The Therapy
of the Magi.

These are merely Babylonian or Egyptian prescriptions in meter.

Pliny (Hist. Nat. Lib. XXX), who believed that he would be able to include all the wisdom of the world in his histories, has left behind him some curious information as to therapeutics derived from Chaldean or Oriental sources. He may be held up as a terrible example to the gentlemen, who still believe that even now the whole field of medical science does not offer too wide a scope for their mental powers. "I find," says he, "that a cold is checked if any one will kiss the nostrils of a mule." "Inflammation of the fauces and the pain will be cured by the dung of kids before they have tasted grass, if it is dried in the shade." "Gargling with the milk of a sheep helps the tonsils and fauces." "Anginas are helped by a goose's gall mixed with elaterium and honey—by the brain of an owl, by the ashes of a swallow soaked in hot water. Ovid is the author of this medicament." These suggestions are taken at random and do not exhaust the supply of therapeutical measures for nose and throat diseases, which were derived from the Magi by Pliny, to whom I would respectfully refer those curious in regard to or desirous of profiting by such

* "Faust in der Geschichte und Tradition." Kiesewetter, Leipsic, 1893.

garnered wisdom. Such things still are to be found in the folk-medicine of rural communities to a surprising extent. These relics of this peculiar phase of medical history are still with us, but we have but little direct knowledge of Chaldean medicine, although Sayce has lately partly deciphered "An Ancient Babylonian Work of Medicine."*

For some mysterious reason Egyptian civilization, and with it Egyptian medicine, was at a standstill for many centuries before the downfall of the Oriental dynasties. At a later period we see the same phenomenon among the Hindus. Although the Greeks apparently derived at least the foundation of their learning from these sources, they were far in advance of them when the generals of Alexander (330 B. C.) established his empire over Asia. Even in the time of Xenophon (401 B. C.), two generations earlier, the Persian monarchs were surrounded by Greek physicians whom they brought to their courts, usually by profuse pecuniary inducements, but not infrequently by force and by kidnapping. It was Ctesias, a Greek physician and historian, who treated the wound, and is said to have saved the life of Artaxerxes when he was left for dead by many of his native followers on the battlefield of Cunaxa, where he so nearly lost his crown to his brother, Cyrus the Younger, who was subsequently himself killed in this battle.† Now, more than a hundred years before this we have seen that Cyrus the Great (559-529 B. C.) sent to Egypt for a physician for the eyes, while Darius (521-486 B. C.), one of his immediate successors, made use of Democedes, the Greek, in preference to native and Egyptian court physicians.

I do not know whether this sequence of historical events in medicine has any great value, but, in connection with other facts, it is perhaps significant of the shifting of medical knowledge.

THE MEDICINE OF THE PARSEES.

If we have not already had sufficient glimpses of Chaldean and Assyrian medicine we have only to glance through the "Zend-Avesta,"‡ the Sacred book of the Parsees, to understand the reluctance of their monarchs to avail themselves of home talent. The remedies of the ancient Parsees consisted chiefly of charms and spells. They divided medical practitioners into three groups: Those who healed with the knife, those who used herbs, and those who practiced spells and incantations, and the "Zend-Avesta" rec-

* "Zeitschrift für Keilschriftforschung," II, 1-3.

† Xenophon: "Anabasis I," VIII. 27. Plutarch: "Life of Artaxerxes."

‡ Darmstetter: "Sacred Books of the East," Vol. IV, Part I.

ommends the latter class, not an anomalous proceeding in ecclesiastical advice of later time as well, but it gives, perhaps, a very good reason, viz.: They were apparently the least to be feared. We learn that one of their evil deities created 99,999 diseases with which to plague mankind. Out of this large number we find no mention of those of the upper-air passages, nor of any other differentiation that is intelligible to us.

THE MEDICINE OF THE "TALMUD."

There are a number of modern treatises upon the medical knowledge of the "Talmud," but a perusal of them, while it reveals a perhaps interesting state of early Hebrew sanitary science, does not give us much insight into their knowledge of diseases of the nose and throat. There are several references* to acute inflammations of the throat which seem to bespeak the existence among the Babylonian Jews of diphtheria, or of that disease described later by Aretaeus as Syriac ulcer, from which "they died the most terrible death of all" the 903 deaths possible. This passage reminds one of the mention of the number of diseases in the "Zend-Avesta." We are still further reminded of Chaldean medicine by the incantations spoken of as therapeutic measures, of demons as etiological factors in fatal throat inflammations, and of the dung of a white dog mixed with myrrh as a local throat application in cases of coryza. Cynanche and "tumor of the palate" (apparently quinsy) are also mentioned.

In the *Mischna*† (Fol. 42) we learn that transverse division of the trachea is fatal, but (Holin, Fol. 45) that longitudinal section is not, if there remains an unsevered portion at the top and bottom. In the "Ghemara" (Holin, Fol. 57) it is stated that a hole in the trachea may be stopped by an artificial contrivance. It appears that they learned these facts from their sacrificial practice on animals. In the "Kethubot" treatise occurs this passage: "Samuel says that the polyp shows itself by a bad smell of the nose. A 'beraitha' says the odor comes from the mouth." Evidently Samuel and the "beraitha" meant *ozena*, although in a footnote the translator seems to think otherwise.‡

* "Die Medizin der Talmudisten," Bergel, 1885, pp. 33, 37, 42, 51.

† "La Medizin du Talmud." Rabbinowitz.

‡ Being entirely ignorant of Hebrew and Sanskrit I have had to rely on the authority of translations which have been sharply criticised, but I have taken some pains to verify the above extracts from the "Talmud." The Jews are said, I know not on what authority, to have been ignorant of medicine until their introduction into Egypt.

HINDOO MEDICIN.

When we begin to search the writings of the ancient Hindus we enter a mysterious realm full of surprises, finding therein many medical facts which seem to belong to a later period of the evolution of the art. Finding these at a date many centuries before the beginning of the records of the Greeks vouches by itself for the remoteness of the beginning of Hindu civilization. That their writings are, some of them, of immense antiquity seems evident, and that they are the origin of much which is to be found in the later scientific literature of the Greeks seems very probable, for it is unreasonable to suppose that Greek civilization was as indigenous as they claimed both for it and for their race. Whatever was the origin of the Hellenic tribes, it is becoming yearly more evident with the advance in archæological knowledge that their learning was transplanted at a comparatively high state of development from the land of the lotus flower, and in all probability from that mysterious tableland of Central Asia, the roof of the world, through the peoples which dwelt along the Ganges and the Euphrates to the shores of the Ægean; but while at its source scientific knowledge seems to have stood still in historical times, it has blossomed in other soil to the fruition we now enjoy. It may be conjectured that the reason for this non-progressive character of the knowledge of the Oriental lies in racial characteristics, and yet it is difficult from our ignorance of their history to understand why this halt in the evolution of their knowledge should have occurred after it had grown to the proportions we recognize in the "Susruta." *The contention of Hass † a German critic, that the writings of the Hindus show that they have never been a progressive race, but that they had borrowed their knowledge from the Greeks without developing it, is plausible when we consider how eagerly the Persian monarchs sought medical aid from that source rather than from the East. The Hindus, however, were further removed from the Persian monarchs than were the Greek cities of Asia Minor, which indeed formed a part of their empire. Perhaps the strongest argument against this assumption is the fact that the same non-progressiveness is seen in Egyptian civilization, and yet the "Papyros Ebers" and other evidences prove that a comparatively high state of

* Guizot and Freeman both ascribe the stationary condition of Eastern civilization to the union of the temporal and spiritual powers, but this scarcely satisfies us, and while admitting the strong probability of the efficiency of this factor, we instinctively look for other causes concomitant and anterior to it.

† Hass: "Zeitschrift der Deutschen Morgenländische Gesellschaft," Vol. XXX, P. 617; Vol. XXXI, P. 647.

Susruta and
Hippocrates.

medical knowledge existed in Egypt at a period even anterior to the date assigned by the Greeks to the Trojan war, and at least many hundred years before the birth of Hippocrates. "Herodotus' Histories" are sufficient evidence on this score. Nevertheless Hass attempts to show that the medical writings of the Hindus are of recent origin, in fact that they were composed at a period subsequent to that in which the various Hippocratic treatises were given to the world. He goes still further and asserts that in all probability the "Susruta" is really a derivative of the Hippocratic system, and even that the name "Susruta" is a Hindu corruption of Hippocrates. It is supposed by him that the Hippocratic writings were rapidly disseminated through Asia and India by the Greek physicians, who were in such demand at the courts of the Eastern kings, but in the accounts of Alexander's campaigns will be found notices of Oriental physicians who possessed such knowledge of various parts of physic as were unknown to the army doctors, especially in regard to the cures for the bites of venomous serpents, which is perhaps not very conclusive evidence of a more extensive knowledge. Nevertheless in reading the "Susruta" and the "Charaka" one will be much impressed by some striking analogies to passages in some of the Hippocratic books which seem not to have been transmitted through generations, but to have been directly transferred from one treatise with very little modification to the other. Which was the original in nowise appears. It is scarcely necessary to say that Hass' arguments have not been generally accepted as convincing.

At any rate, since the dawn of history, western medical knowledge blown on the wings of the wind from European lands has scarcely produced a ripple on the stagnant pool of Hindu medicine, and to-day the two systems in India are practiced side by side.

The Hindu "Ayurvedas," just as the medical knowledge of all ancient peoples, were supposed to be of divine origin. Even in modern times the Christian Scientists and their ilk remind us of this tendency. The "Ayurveda of Susruta" was revealed by D'havantare, the physician of the gods, out of compassion for the suffering of mortal men. These medical vedas or axioms were collected and transcribed by his disciple Susruta. The "Ayurveda of Susruta" is said by the wise men of the East to be at least of a date 1000 years B.C., and it contains scraps of medical lore which bear every evidence of being still more ancient. Time being of little

value to the dreamy Hindu, his chronology is a source of inexhaustible irritation to the uneasy Western savage. Although we of another civilization have good reason for tracing our philological, our scientific and philosophical, even our ethnical origin, back to this cradle of antiquity, we have traveled a long distance since then on all these highways, and not only is the language obscure, but the ideas are many of them unintelligible to us in their old books. Therefore, although the "Susruta" is admirably arranged in captions much in accord with modern medical ideas, the Latin translation of Hessler (1844) is in many places confusing, and it is perfectly evident that the translator is often himself groping in the dark.

There are to be found in the "Susruta," and easily referred to in Hessler's rendering, many references to the diseases of the nose and throat, some of them recognizable by our barbaric Western intellect, but many of them to us quite vague.

The "Charaka Samhita" is being translated from Sanskrit into English by Avinash Chandra Kavaratna, a learned pundit of Calcutta. This work is said by the Hindus to be a revelation of Indra, the god of the middle air, through Charaka the sage, and is said to be of much more ancient origin than the compilation of "Susruta." At least it is more unintelligible to the modern student of medical history. To the student of philology it is said by Wise and Müller, and Eastern scholars generally, to be of greater value than the "Susruta," and the learned and enthusiastic translator, a patriotic Hindu, indulges in the fond hope that by the diffusion of the wisdom of Charaka a profound impression may be made upon the practice of the medical art as pursued by the energetic sons of the West, the physicians of Europe and America. I am afraid our Hindu confrère does not realize the obduracy of the seed of Japhet.

"Charaka-Samhita."

Both in the "Susruta" and in the "Charaka" the declaration is made, and this is found very little modified in the medical works of the Greeks, that "Wind, bile, phlegm have been said to be the cause of all bodily diseases." What follows, however, I have not noted among the writings of the Greeks. It is a little too mystic for them, apparently. "The qualities of passion and darkness have again been indicated to be the causes of mental diseases."—("Charaka.")

In "Susruta" we learn* that there are sixty-four diseases of the mouth in seven situations. The seats of morbid action are the

* Hessler: "Patholôgia," Chap. XVI, P. 202

lips (8 diseases), roots of the teeth (15), the teeth (8), the palate (9), the fauces (17) and all of them together (3).*

As one of the diseases of the palate we recognize quinsy in Hessler's Latin: "Tumor rigidus, in palati regione a sanguine ortus existit. Cognoscendus est hic morbus angina, febre dives." There are various passages translated by Hessler which Morell McKenzie supposes to refer to diphtheria, but I doubt if we can differentiate the different forms of acute throat inflammation, accounts of which are found here, as elsewhere, in all extensive treatises of the ancients on disease, it matters not to what age or people they belong.

One can not but be struck by the early tendency of the medical man to lay great stress and emphasis on a name. We have seen how the physician of Egypt was to announce the presence of a "fatty tumor in the neck," and here in the "Susruta" the rendering is: "Qui tumor in linguæ dorso magnus est, is intumescencia vocatur." We may readily imagine that these venerable doctors of the hoary past made use of some recondite word of a language still older than their own, if any such there were, to express in suitably dignified terms for the edification of the laity a diagnosis which was really only a definition, "Un specieux babil, qui vous donne des mots pour des raisons," as Moliere† puts it 2500 years later.

Uvulotomy
and Tonsil-
lotomy.

Here and there we can recognize familiar surgical operations. "By means of forceps between thumb and finger, drawing the uvula forward, the physician may cut it with a sickle-shaped knife above the top of the tongue." "Gilagum (quinsy ?), so called, may be cured by the knife." Firm, hard and filling the fauces, extraordinarily swollen with sprouting flesh, giving rise to much pain, caused by the evil inflammation of the humors, killing almost a hundred men, it is recognized that (this ?) swelling of the ton-

* The statement is made by Galen—"Galen in Hippocratis Librum de Alimento Commentarius," III, XXVI, Vol. XV, P. 363 (Kuehn)—that the school of Cnidos, the rival of that of Cos, divided diseases into a great number of different kinds: "Seven diseases of the bile, twelve diseases of the bladder, four diseases of the kidneys," etc.

If we consult the ideas and the philosophy of Pythagoras (500 B. C.), which had a profound effect upon Greek civilization and had a great influence at the school of Cnidos, we will find in them traces of much which he derived, evidently, from his long travels and his diligent studies pursued among the Oriental nations with which Greek tradition credits him. Now this reverence for numbers we find in the "Charaka" and "Susruta," and we have already noted it in the "Zend-Avesta" and in the "Talmud" in connection with diseases. It is by many little hints such as this that we are able to trace the connection of Greek medicine with that of the Orientals, and we may also note how the latter have purified and exalted it, not only by their initiative, but by the dropping of the superstitions with which it was overgrown. There is very little of spells and incantations, and reverence for numbers and malignant demons, to be found in the Hippocratic writings.

† "Malade Imaginaire."

sils is incurable; but a tumor seen in the throat about the size of the seed of the *Phyllanthus Emblica*, stationary, a little painful, made up of phlegm and blood, adherent like the fruit of the *Terminalia Alata*, this, curable by the knife, is called *Gilagu*." Are we here to recognize a differentiation of malignant and benign swelling of the tonsils and the prevalence of the practice of tonsillotomy?

Wise, in his "Hindu System of Medicine," describes a method of abscission of the tonsils which aimed at removing a third part only with the knife. "If all is cut the patient will die of hemorrhage." As he does not give his reference I am uncertain if this is contained in the more ancient books or not. Many more recent writers have insisted that a partial excision only is ever indicated, and is sufficient. We may be sure from these passages that they knew what secondary tonsillar hemorrhage meant as well as some of the rest of us.

It is especially in the Hindu writings that we find such complete and minute accounts of the various plastic operations about the nose. This was due, doubtless, to the practice of the wrathful oriental potentates who amputated the nose out of revenge or in the exercise of judicial penalties. This art was almost entirely forgotten by the Greeks, because they shrank in horror from the mutilation of the human form, and had little opportunity to practice plastic operations for its correction. In a more savage age and country, many centuries later, it was revived by Tagliacozzi, but we shall easily trace it back to its Oriental source.

Vaporization and fumigation through a tube were frequently employed in the diseases of the nose and throat. Stimulating and acrid vapors seem to have been recommended in what we may conjecture was *ozena*.* It was also prescribed for coughs, asthma, hoarseness, mucus discharges and enlargement of the tonsils, but as it was also advised for "morbid baldness and a reddish yellowness of the hair,"† one is left in some doubt as to its *modus operandi*. These diseases were all due, according to the sage, to the same cause. Local applications of ointments were made to the nostrils and various sternutatories were used for cleansing the nasal chambers, after which, apparently in *coryza*, the following directions were explicit, and could be only slightly improved by the modern rhinologist: The patient was to lie on his back, raise the tip of his nose with his index finger and allow his physician to drop in his nostrils warm oleaginous liquids. While this was being

Rhinoplasty.

Treatment of
Catarrh.

* "Susruta." *Therapia*, Cap. XXII-XL. (Hessler.)

† "Charaka." (Trans. by Kavaratna.)

done he was not to become angry, nor speak, nor laugh, nor swallow the oil dripping from his nose, but spit it out. The use of sternutatories or snuffs was also recommended for sleeplessness and clearing the head in the morning—apparently prescribed for conditions in which we order douches and sprays. Gargles were also a part of their therapeutical resources. They very often used oil as a menstrum, and apparently had a more thorough way of using the gargle than we usually insist upon.* It is evident that these old Hindus recognized the dependence of laryngeal on nasal diseases, as is apparent in this sentence in Hessler's translation: "Nasale remedium morbos hominum supra claviculam ortos refrenat et organa sensuum pura atque os suaveoleus efficere potest."

In the light of recent sanitary doctrines and regulations the following quotation from Charaka (P. 74) may be of interest: "One should not eject the mucus or phlegm of one's nose in a place that is crowded." This, however, may have been only a precept of social intercourse rather than having the additional sanitary weight it now possesses. At this place occurs rather frank advice as to the relations between man and wife. They are amusing, but perhaps a little out of place now in print when not attended by the strict scientific necessity for their publication. The one precept which may be quoted here is as applicable to laryngologists and rhinologists as it is to the rest of mankind. It is to the effect that a man should make a confidante of his wife, but he should not tell her all his secrets. These little scraps from the dim and misty past of a forgotten civilization make one realize the universal brotherhood of man. In fact, one cannot even glance through the works of Charaka, and especially of Susruta, without having one's mind impressed with the antiquity of human knowledge and wisdom, and it is a vast education for any man when he can be brought to realize, in this egotistical epoch, how little of it after all has had its origin in his day and generation.

We can only conjecture that the development of the arts and sciences of the ancient oriental world must have occurred chiefly in some prehistoric cycle of human activity, when man's mind and body were as free along the Ganges as they were on the shore of the Ægean when the Hellenic tribes took up the torch, in the blazing light of which we still live. This is what liberty means, and we can now see along the Ganges and on the Ægean the results of the mental and political slavery not only of an oriental, but of a once glorious occidental race.

* "Susruta." Tomus, III, p. 42. (Hessler.)

In Wise's work on "Hindu Medicine," from which I now quote, there are many accounts of nose and throat diseases which I can not find or have inadvertently passed over in the translations of the "Charaka" and of the "Susruta" at my disposal. As he states that his work is taken exclusively from the ancient Hindu writings, although in the passages cited he does not indicate the sources from which he draws his information, it may be inferred that they are of equal antiquity with those I have drawn directly from the translations of Hessler and Kavaratna. Moreover, I recognize in Wise's book many passages identical with those in the "Charaka" and "Susruta."

Medicines administered by fumigation through the nostrils were used not only for local nasal diseases, but for some general affections, and particular directions are given for using them. Among the errhines or sternutatories to clear the head may be noted pepper, mustard, orris, ginger, asafetida. One might think they would be efficient. One of the methods recommended for causing sneezing was to look at the sun so that its rays would fall on the mucous membrane of the nostrils. We recognize here an error in mistaking a reflex phenomenon of the retina for a direct action.

Among the gargles, besides the more agreeable ones of oil, vinegar, honey and the juices of fruits, the urine of cows finds a place. Stimulating and irritating substances (pepper) were also prescribed as gargles. There is an instrument spoken of (P. 169) for "eradicating nasal polypi; a frequent and troublesome disease in many parts of Hindustan." It seems to have been some sort of a curette.

(P. 186.) If a foreign body is "in the throat, the extraneous matter may be discharged by thrusting down a hot iron to dissolve it, or soften it, and so remove it. In such case the hot iron is passed through a metallic tube. A probang for removing fish bones is usual; by drinking fluids and emetics it is also dislodged; this may also be done by beating the patient upon the back of the neck." Among the fifteen modes of removing extraneous substances, *Bidmapana* is "by blowing, as a substance introduced into the larynx, which produces great irritation and strong efforts at coughing," etc. *Pramarsa*: "If in the nostrils errhines are to be used." It must be confessed that the art of removing foreign bodies from the upper air passages does not seem to have been very highly developed, and the above described use of the hot iron seems strange and hardly creditable. Is it possible that we have here a confused Hindu rendering of the recommendation by

Foreign
Bodies.

Fracture of the
Nose.

Hippocrates for the use of the hot iron in the nose?*

Again we are reminded of Hippocrates in the passage (Wise, P. 192): "When the bones of the nose are depressed they are to be raised into their natural position by means of an instrument called *Shalaka*: a hollow wooden tube is kept in the nostrils so as to retain the bones in their natural position."† We may note another passage, and this is especially dwelt on by Hass (*l. c.*) as indicative of the corrupt and degenerate derivation of Hindu medicine from the Greeks. There is probably no quotation from Hippocrates so well known as that in which he describes the facies of approaching death (Prognostics 2): "A sharp nose, hollow eyes, collapsed temples; the ears cold, contracted, and their lobes turned out; the skin about the forehead being rough, distended and parched; the color of the whole face being green, black, livid or lead-colored." Now compare this with Wise's translation from the "Susruta": "When it (the nose) becomes pale, dry and shining, and is turned to one side; the nostrils extended, dry and dirty, and the passage of the air produces a noise; or when the point of the nose retracts and is flattened with weakness and depression, the person will soon die." We note how distinctly inferior this is to the graphic description of the Greek sage. I doubt very much the conclusiveness of even the suggestiveness of the passage in the "Susruta" as an argument for the derivation of Hindu from Greek medicine. Similar phenomena were observed by men of dissimilar mental powers.

There are thirty-one diseases of the nose. Simple catarrh, acute and chronic, was called *Pinasa*. *Ozena* is *Putinaska*. Nasal polypi were termed *Nâsârsah* and there were four kinds. Tumors of the nostrils are of five kinds and were called *Nâsârbuda*, but it does not appear how they were distinguished from the nasal polypi (Wise, P. 289). Goitre, tumors of the neck, scrofulous swellings, hoarseness, asthma, cough, are all described, but there is little in the passages which is either interesting or instructive. We may pass lightly over the Hindu conception of anatomy and physiology. As an indication of its limitations, Wise, in his "History of Medicine among the Asiatics" (Vol. I, P. 135), among other examples of their ignorance, declares that the Hindus had but one name for throat, "*Khunt*," including in its signification not only the air-way but the gullet.

* Diseases II, where much else resembles the "Susruta."

† Vid. "Susruta." Hessler: Tomus, II, P. 67.

PRAE-HIPPOCRATIC MEDICINE IN GREECE^r

Whatever may have been the truth as to the derivation of Hindu medicine, we have little actual means of knowing whence the Greeks drew the germs of their medical knowledge. We may conjecture that it came with the Phœnician trading vessels from the shores of Asia, or the Hellenic tribes may have brought it from the Asiatic tablelands with them, but more probably much the larger portion of it came directly from the valley of the Nile when in 670 B. C. the land of the lotus flower was thrown open to Greek commerce and Greek curiosity. Thales and Pythagoras are significant personages in the early history of Greek science. In the fragments of their philosophy as well as in the legends of their lives we find unmistakable evidences of their sojourn among the Orientals and of their absorption of Oriental civilization and philosophy. The same may be said of Solon.

Perhaps it may be of some value to note that therapeutics in Greek medicine include none of the disgusting substances and scarcely any of the charms and invocations which mark so strongly that division of medicine among the Egyptians, Chaldeans, Hindus and Eastern races generally, and which we have seen later was introduced into the Greek medical writings of the Roman Empire and upon which I have already commented.

The period of four hundred or five hundred years which stretches from the supposed age of Homer to the birth of Hippocrates (460 B. C.) is one of which we know but little in the history of medicine. It is entirely devoid of medical works which have come down to us. In philosophy, Thales, Xenophanes and Pythagoras greatly influenced the minds of men in weaning them from the superstitions recorded in the "Theogony" of Hesiod. They winnowed out from them idealistic portions which could be made to stand as symbolical of their own ideas of cosmogony.* Coming down to the time of Socrates, we find him recognizing things divine and things material, while Hippocrates, but little his junior, brings all phenomena under one head and calls them all divine, one not more than the other. (Airs, Places and Waters.) Whatever may have been the channels by which were carried the seeds of knowledge, the marvelous growth which sprang up on the soil of Greece has not ceased and will never cease to excite the wondering admiration of mankind. It is significant perhaps that the opening of Egypt to Greek commerce took place at about the time of the beginning of written records in Greece (660 B. C.

Civilization in
Greece.

* Grote: "History of Greece," Vol. I, p. 368 f. f.

Grote: "History of Greece," Vol. II, P. 149), and two hundred years after writing was first introduced and the epic ballads of the wandering bards and rhapsodists became perpetuated in written records we have the birth of the "Father of Medicine." It needs only a cursory perusal of the Hippocratic writings to realize how intense the mental activity of nascent Greek civilization must have been to have produced in the short period of two hundred years a condition which made possible the compilation of these masterpieces of medicine in whose inspiration we still live. After the excursions we have made into the more stagnant civilizations in the search for the origin of medical knowledge we feel that we are nearing home, or at least on more familiar ground, when we begin the study of Greek medical history. At the port of entry looms up, obscuring all others, the great name of Hippocrates. There was medical knowledge in Greece before the birth of Hippocrates, of course, but the records of it have perished and so have the works of those who followed him. It is only by scanning secular literature and by noting references in later medical writings that we are able to obtain some glimpses of the state of the knowledge of the anatomy and the functions, but scarcely of the diseases of the upper air passages. In the legends of the Hellenic races are to be found traces of familiarity with a medical art which existed long before the rise of the school which clustered around the altars of Æsculapius in the Isle of Cos. Hippocrates* traced his lineage in the seventeenth generation through a medical ancestry to that demigod, who according to Cicero (*De Natura Deorum* III, 22) was the son of Apollo or of Hermes, or of Arsippus and Arsinoe. He was the first to discover the probe, according to Greek legends, the first to bandage a wound, the first to teach men to draw teeth and to purge their bowels. For these and other services he was deified, but because he raised the dead and attempted to exercise his power of making men immortal he was struck into Tartarus by the forked thunderbolt of the jealous Olympian Zeus. His two sons, Podaleirus and Machaon, led the thirty Thessalian ships to the siege of Troy (*"Iliad,"* II, 731) where they exercised their father's art as well as that of Mars. Machaon was said† to be skilled in the arts of the surgeon, while Podaleirus had "skill over things invisible," and to the latter was given precedence, a custom still prevailing in medicine to-day. It is to Machaon, who knew how to draw out darts, to make incisions,

Ancestry of
Hippocrates.

* Grote: "History of Greece," Vol. I, P. 182.

† Arktinus: (770 B. C.) "Epicc. Graec. Fragm.," II, P. 22.

and to treat wounds and ulcers, that the present generation of rhinologists owe homage rather than to Podaleirus, who diagnosed madness in the blazing eyes of Ajax.

We can do little more in this period of medical history than seek out the origin of the nomenclature of the parts of the human anatomy with which we are concerned. We have seen that the word nose is apparently contemporaneous in origin with that of the Aryan languages. While we have the authority of Daremberg * for the statement that there are only five instances mentioned in Homer's "Iliad" of wounds of the throat, there are a large number of lines in which the nose is mentioned. We read ("Iliad," V. 291) how Athene directed the lance of Diomedes so that it pierced the nose of Pandarus near the eyes, crashed past the white teeth and, cutting the tongue, appeared under the chin, and how the mortally wounded chieftain pitched headlong from his chariot. There is a line in the "Iliad" which gives evidence that embalming was understood by Homer's Greeks (XIX, 39).

The Nose and Throat in "Homer."

The goddess Thetis dropped nectar and ambrosia into the nostrils of the dead Patroclus to keep the skin hard and firm and thus preserve the body. This she does to allay the grief of her son Achilles at the death of his friend. As we know that embalming was foreign to later Greek customs we may perceive here a familiarity at least with Egyptian practices, if not an influence of Egyptian ideas, and to some extent the prevalence of oriental customs.

We have seen how indefinite was the Hindu word for throat. Although the Greeks, unlike the Hindus, had many words for this part of the anatomy, they used them at first very indefinitely and interchangeably. The word pharynx in early Greek literature was about as indefinite as our word throat. It occurs in Homer's "Odyssey" first. If you will turn to the graphic description of that horrible man-eating Cyclops, Polyphemus, in the ninth book, at line 373, you will find the word there used in describing how, after eating a brace of Greeks and swilling barrels of wine, the bloody swinish giant fell over in drunken stupor on his back in the cave while wine and morsels of his cannibalistic feast regurgitated from his capacious pharynx ("Odyssey," IX, 373).

Etymology of Greek Words for "Throat."

φάρυγος δ' ἐξέσσυτο δινος ψωμοῖ τ' ἀνδρόμεοι.

Whether this is the first written use of the word or not, it certainly occurs here in a most vividly striking passage of the greatest of poems by the first of poets. It will be seen that Homer has used the word here in accordance with its present significance, but

* "La Médecine dans Homère."

in the "Odyssey again (XIX, 480) Ulysses grasps with his right hand the *φάρυγξ* (throat) of Euryclea to prevent her crying out. Even in the works of Hippocrates a similar looseness of meaning is to be observed, as, for instance, in the Littré edition (Vol. VIII, P. 565), where the translator renders the word as larynx. Galen, * however, in his comments on Hippocrates, declared that by the term pharynx the latter understood that region which is situated in front of the gullet and wind-pipe and which may be inspected by depressing the tongue.

The word larynx is not found in Homer, but is first noted among the dramatic poets; but here again quite indefinitely arousing our suspicion that *λάρυγξ* may have been at first a corruption and a tautological use of the word *φάρυγξ*. This may be seen by a reference to the plays of Aristophanes ("The Knights," I, 1363; "The Frogs," I, 575). In the "Cyclops of Euripides" (I, 157) occurs the passage, *μῶν τοῦ λάρυγγα διεκάναξέ σον*, which the dictionary translates, "Has aught run gurgling through thy throat?" The thought arises from this quotation that the idea of the drink going into the larynx must have originally arisen from the resonance of the larynx and trachea transmitting the sound of the swallowed liquid from the esophagus. This might have been still further strengthened by the sight of the movements of the larynx in the act of deglutition. Hippocrates, however, will be found to use the word more correctly when referring to results of the division of the wind-pipe ("The Flesh," 18), and in the chapter ("Concerning the Nature of the Bones," 1) where he describes how the larynx goes to the lungs and thence to the top of the bladder, but even as late as Galen the two terms were occasionally used interchangeably. Aristotle also uses the word in its present signification and only rarely speaks of the wind-pipe, *i. e.*, the trachea, as extending from the lungs to the mouth. Not until Galen, however, do we find the term definitely established by his anatomical descriptions.

Homer uses the word *Ασφάραγος* once in the "Iliad" (XXII, 328), as a similar but more indefinite term. The god-like Achilles, with the terrible spear, smote Hector in the throat, above the clavicles, where the neck starts from the shoulder, in order that there might be quick loss of life. "There the point went through the tender neck," but the *Ασφάραγος* was not cut, in order that the prostrate man might answer the victor's cruel taunts. It is clear, therefore, that Homer recognizes, by this term, the organ from

Drink in the
Larynx.

* Ed. Kuehn. XVIII. B. P. 264.

which the voice issues. We may be allowed to conjecture, in the absence of any information to the contrary, that this term *Aspharâgos* arose from the contemplation of the wind-pipe as it sprouted from the root of the lungs of the slaughtered sacrificial animals, whose entrails were examined by the priests in their religious ceremonies for prophetic indications. It must have appeared to them not unlike a thick stalk of the vegetable for which the word, in one of its two forms, was identical, according to the dictionary. From this may have come *φάρυξ* and later *λάρυξ*. This, however, is entirely conjectural on my part.*

Daremberg is of the opinion that Homer, and, of course, by Homer we mean the men of his day, knew that food and drink passed down the gullet. He refers to the "Iliad" (XXIV, 641, 642), but I am not satisfied that *λανκανίης*, the word employed, meant the esophagus. It seems to have been applied almost as loosely as the other Greek words for throat (Vid., etc., XXII, 325).

We will discuss later the interesting error of the ancients in regard to the destination of liquids when swallowed. It is well known, of course, that the word trachea arose from the subsequent use by Erasistratus (Sprengel) of that Greek adjective, meaning "rough," in connection with the artery (*αρτηρία τραχεία*) to signify that it belonged to the same class of structures as we now know to carry blood and not air. The artery part of the name was dropped when this error passed away and the trachea remained. *Βρόγχος* was a word also frequently applied to the whole wind-pipe, but later coming into use for the channels below the division of the trachea.

Finally, I quote from another brochure of Daremberg† the derivation of another term rhinologists use every day:

"Euripides (Fragm. 1044) is, I believe, the first author where one meets with *Μυκτήρ*—the nostrils or the nose. It seems also that Sophocles (Fragm. 58), and especially Aristophanes (Fragm. 650), calls the nose or the nostrils by the name *Μύξα*, which is regularly applied to the mucus which escapes from them. ("The Knights," 910; "The Wasps," 1488).

Scientific and philosophical records being so defective, and purely medical treatises being entirely lost, if any existed before the Hippocratic era in Greece, we can not hope to glean much in

* While the root of the word pharynx is said to be the same as in *φερω*—Latin *fero*—we may imagine it is true, without any proof to the contrary, that the word *aspharagos* arose as here stated.—Vid. Cent. Dict. and Greek Lexicon.

† "L'Etat de la Medecine entre Homere et Hippocrate."

regard to our subject from this period. Nevertheless some faint reflections may be found in the works of the later writers.

Early Greek
Superstition.

Here is a fragment suggestive of the character of early Greek medicine, showing that it differed little from that of other rude and uncivilized races. The Dog and the Serpent were alike sacred to Æsculapius, and on the second one of the columns, seen by Pausanias at Epidaurus, this record has been found engraved among others of medical interest, testifying to the efficacy of the holy dogs kept at the shrines. A child of Egina, "affected with a tumor of the neck, applied to the god. One of the sacred dogs licked the affected part and cured it."*

Philosophy has always at all epochs of Medicine dominated it. Pythagoras established four elements: Earth, Fire, Air and Water—Empedocles admits these, but adds to them their qualities: the cold and hot, the wet and dry, which are found in medicine until the Renaissance.

In Plutarch's "Morals"† there are to be found some curious chapters on the senses, and he there quotes from many of the old Greek philosophers who lived before the time of Hippocrates and whose writings were apparently extant in the time of Plutarch (46 A. D). The chapters on smell and taste are of interest to us here.

"Alcmaeon (B. 520 B. C.) believes that the principal part of the soul, residing in the brain, draws to itself odors by respiration. Empedocles (B. 490 B. C.), that scents insert themselves into the breathing of the lung; for when there is great difficulty in breathing, odors are not perceived by reason of the sharpness; and this we experience in those who have the defluxion of Rheum."

"Alcmaeon says that a moist warmth in the tongue, joined with the softness of it, gives difference of taste. Diogenes,‡ that by the softness and sponginess of the tongue, and because the veins of the body are joined in it, tastes are diffused by the tongue; for they are attracted from it to that sense and to the commanding part of the soul, as from a sponge."

Alcmaeon is said to have been the first Greek anatomist and to have dissected the eyes and ears of animals, discovering the optic

* Reinach: "Revue Archeologique," 1884, II, P. 129; 1885, I, P. 267. For a most interesting account of the Temple of Æsculapius at Epidaurus, see a paper by W. S. Coleman, M.D. F.R.C.P., St. Thomas Hospital Reports, Vol. XXVII, 1898.

For a very readable account of the cult at Epidaurus, see "The Temples and Rituals of Asklepios," by Richard Caton, M.D., etc., 1900.

† Translation. Ed. Goodwin, 1870, Vol. III, P. 170 (De Placitis Philos.).

‡ I presume Plutarch here refers to Diogenes of Apollonia, born in the fifth century B. C., who described the distribution of the blood vessels, which is to be found in the fragment of his writings still preserved. "Fragm. Philosoph. Graec. Mullach," Vol. I, P. 254.

The Eustachian Tube.

nerve and the Eustachian canal, thus antedating in the latter discovery, Eustachius by many centuries. Aristotle (*Hist. Animal* I. IX, 1) comments on a mistake of Alcmaeon in supposing that goats breathed through their ears. It is singular that this error should crop out so late as the seventeenth century A. D., but Tulpius may be found* asserting, in spite of Aristotle, that on account of this anatomical configuration, as described by Alcmaeon, it is possible in labored inspiration for air to find this auxiliary passage to the lungs.

Alcmaeon explained hearing by the hollow bone behind the ear —“for all hollow things are sonorous.” (Plutarch l. c.)†

Empedocles discovered the labyrinth of the ear and explained sound by the impress of air upon it as upon a drum. In one of the fragments preserved from the “*Carmina of Empedocles*,”‡ we read: “Thus they breathe out and in. Bloodless tubes extend through all the flesh throughout the whole body, and the end of these placed within the nostrils is perforated by large openings leading to the cavities (cerebral?) so that they may hold back the blood and open free passage for the air through the meatus.” This perhaps would suffice to illustrate the confusion in regard to anatomy which existed among the best informed of those philosophers older than Hippocrates, but I may perhaps be allowed to add an embryological idea which Sprengel has found among the fragments of verses of Empedocles: “He attributed the formation of the abdominal cavity and that of the intestines to the sudden and rapid passage of water through the body at the moment of its formation, and the external openings of the nose to a current of air which was established from the interior to the exterior.”

Diogenes of Apollonia (500-400 B.C.) explained the superior intelligence of men by supposing they breathed a purer air than the beasts which carry their noses near the ground. (Draper.)

Democritus is said to have been born at Abdera in the same year (460 B.C.) and to have been greatly admired by Hippocrates, who reproved the countrymen of Democritus for having supposed him insane and for sending for him to cure him. He is said to have derived his atomic theory from Leucippus (B. 500 B. C.) He is quoted by Plutarch (l. c.) in regard to the voice as saying that “the air is broken into bodies of similar configuration and these are rolled up and down with the fragments of the voice.” This

The Atomic
Theory.

* *Observat. Med.*, 1641, Lib. I, Cap. XXXV.

† See also Kuehn: “*Opuscula Minora*,” I, P. 69.

‡ “*Fragm. Philosoph. Graec.*” Mullach, 1875, 2d Vol. I, 343 f. f.

statement seems, of course, rather fantastical and we might suspect Plutarch had confused a more intelligible passage from Democritus did we not find in one of the fragments* remaining to us from Democritus an analogous statement as to taste, the distinctions of which he attributed to the different shapes of his atoms. Plutarch continues: "The stoics say the air is not composed of small fragments, but is a continued body and nowhere admits a vacuum; and being struck with the breath, it is infinitely moved in waves and in right circles until it fills that air which invests it, as we see in a fish pool which we smite by a falling stone cast upon it; yet the air is moved spherically, the water obicularly. Anaxagoras (B. 500 B.C.) says a voice is then formed, when upon a solid air the breath is incident, which being reperfused is carried to the ears; after the same manner the echo is produced." Out of much which is to us mere jargon, but which to them was perhaps full of meaning, it may be seen that we may occasionally extract passages which need little altering to conform with modern doctrine.†

* "Fragm. Philosoph. Graec." Mullach, 1875, Vol. II, P. 362.

† It is absolutely necessary for any one desiring an intelligent knowledge of the medical theories in the writings of Hippocrates and of all subsequent medical writers, that he should acquaint himself thoroughly with the material and psychic philosophy of the ancients. A very good résumé of the subject so far as it applies to medical doctrines may be found in the Preliminary Discourses attached to Adams' Sydenham edition of "The Genuine Works of Hippocrates," while Draper in his "Intellectual Development of Europe" gives a somewhat biased review of Greek philosophy in its broader ramifications. In the "Proemium of Celsus," however, will be found the most succinct and the clearest account of Medical Schools among the ancients.

(To be continued.)

SEROUS DISEASE OF THE MAXILLARY ANTRUM WITH A REPORT OF TWO CASES.*

BY W. E. CASSELBERRY, M.D., CHICAGO.

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In the critical study accorded diseases of the nasal accessory sinuses, empyema has been the center of interest because suppuration in the maxillary, frontal or other sinuses is found not only to underlie offensive nasal affections but to constitute a center whence septic material is absorbed and infection spread to neighboring organs. Less attention, especially in this country, has been given the muco-serous accumulations; indeed, the frequency of so-called "serous disease" of the antrum has been disclosed only of late by a systematic resort to exploratory puncture in the search for empyema and by assiduous post-mortem inspection of the nasal accessory sinuses. The clinical picture of acute rhinitis associated with acute inflammation of the maxillary or frontal sinus is not unusual. The pain and sensations of heat and distension are observed to be momentarily relieved by the occasional escape of mucus or muco-serum through the narrowed ostium into the middle meatus. This can be none other than an acute catarrhal sinusitis with excess of secretion, which condition has been verified at autopsies in influenza cases by Weichselbaum¹, who found muco-serum which was not cystic retained in the antrum, and in diphtheria and pneumonia cases by Wertheim.²

Acute sinusitis may terminate in spontaneous recovery, in acute suppuration and then recovery, in chronic suppuration and probably in chronic catarrhal sinusitis. The existence of the latter with retention of muco-serum is also verified by autopsy.³ Whether it follows acute sinusitis or originates *de novo* is not material. Whether it can result in the retention of a serous liquid, as in so-called "serous disease" which is not cystic, is still a subject of discussion. Granting tentatively the affirmative, chronic catarrhal sinusitis may then result in the following formations as products of the inflammation:

1. Polyps.

* Presented at the annual meeting of the American Laryngological Society, New Haven, May 27 to 29, 1901.

2. Cysts.

3. Osteophytes.

4. Hydrops inflammatorius or serous collection. Polyps, cysts and osteophytes may also exist in conjunction with suppurative sinusitis.

Only large accumulations are described in the older literature, those sufficient to cause pronounced pressure symptoms, external deformity, and through erosion of the bone the appearance of a fluctuating crepitating tumor with perhaps a fistulous opening. The term *mucocele*, while likewise applied to serous collections, is more particularly used when the contained material is mucoid, soft, semi-solid, varying to a thinner consistency, and the lining membrane the site of a low-grade cell proliferation, with edema, polyps and cysts. When, as may be the case with any sinus, but particularly with the antrum, the distended sinus contained a thin serous fluid, it was known as *hydrops antri*. Giralde⁴, Virchow⁵ and Wernher⁶ early objected to the latter term as applying a false notion of the real pathological condition, maintaining that the fluid was not free in the sinus, but was contained in a cyst. Berger⁷ also likens it to a specimen shown in conjunction with magitot of a dentary cyst which had filled the sinus. Cysts when not dentigerous are ascribed⁸ to dilatation of a follicle or degeneration of a polyp.

Several modern authors, however (Browne, Kyle, Shurley, Schech), while recognizing a greater frequency of cysts are disposed to retain the term "hydrops" or its equivalent as a continued recognition of a non-cystic serous exudation either inflammatory with closure of the osteum, passive as in kidney disease, or from venous obstruction. Cases by Delie, Dmochowski⁹ and Krebs are cited in which there was no cyst wall and no "rest" or sinus angle unfilled.

Thus the matter stood until, in consequence of the systematic resort to exploratory puncture, smaller, often insensible, accumulations of muco-serum and serum are found to be relatively frequent. Noltinius¹⁰ in 1895 reported the stately number of thirty-seven cases of "serous disease" ("Seroser Erkrankung") of the maxillary sinus. He believed the fluid to be free in the antrum, therefore a muco-serous or so-called serous inflammation. The treatment was by simple drainage. Korner¹¹ in 1896 reported seven similar cases and confirmed Noltinius' views. Halasz¹² in 1898 reported five cases. Dmochowski¹³ in 1895, in a prize essay, based on numerous anatomical sections, records two which particularly bear on this point. The first (Case I) was devoid of symptoms during life, but at autopsy had in the right antrum 3 c.c. of muco-serous

fluid which contained epithelial cells and lymph corpuscles and clouded with acetic acid. The mucous membrane was much hypertrophied, yellowish and edematous. When incised a similar fluid escaped. Microscopically the membrane showed epithelium in good condition, the fibers were pushed apart and the meshes contained collections of small cells. Glands numerous, but degenerated. No cysts. The osteum maxillare was patent. Other sinuses and mucous membranes unaffected. The case is interpreted as one of chronic catarrhal sinusitis. In the other case (Case II) there had been no symptoms during life indicative of antrum disease, but at autopsy the osteum maxillare was found completely closed and the sinus distended by a transparent yellowish fluid which did not cloud on the addition of acetic acid and contained only fibrin. The mucous lining was thin, shiny, devoid of epithelium except in spots. Glands few and degenerated, blood vessels numerous. In one angle of the sinus grew a cystic polypus the size of a hazelnut. Dmochowski regards this case as an instance of "hydrops inflammatorius" and not as a large cyst and remarks that a cystic polypus growing within a cyst has not yet been observed. He explains the development as follows: The chronic catarrhal secretion, in consequence of closure of the osteum, distends the sinus, the mucous membrane and glands atrophy from pressure and the original mucous morphological elements disappear by fatty degeneration, there remaining in the fluid only fibrin which also finally disappears. He regards the process as analogous to hydrops processus vermiformis. Killian¹⁴ in "Heyman's Handbuch," and Hajek,¹⁵ while regarding cystic formations as more numerous, accept as possible the free accumulation in the antrum of muco-serous and serous fluids. Out of 400 autopsies Wertheim¹⁶ found free serous fluid in the sinuses in 48, in the antrum in 14. Of 48, six showed inflammatory changes in the mucosa.

Alexander¹⁷, on the other hand, maintains that these conditions concern always cysts, which opinion is based upon an anatomical specimen in which a clump of small cysts formed a bolster-like mass at about the center of the nasal wall of the antrum, and upon clinical cases in which, after curetting, remnants of cysts were identified. In two cases (Cases III and IV), with pus in the middle meatus, aspiration yielded serum, arguing in favor of cyst in a suppurating sinus. In another case (Case VI), on opening the antrum, there was found the collapsed wall of a large cyst within which grew a small cyst. He regards this as a refutation of Dmochowski's position that a cyst cannot grow within a cyst. Hajek¹⁸ also reports cysts yielding serum by aspiration from suppurating antra.

My own cases afford opportunity for study only from a clinical standpoint, yet they present features of interest which may tend toward a clearer understanding of the subject. The first is one of acute sinusitis with retained muco-serous secretion, and is serviceable for comparison of the fluid with that of the second case, one of chronic serous disease.

Case I.—G. S. I. Recurrent nasal polypi, polypoid transformation of the middle turbinated bodies. Septum deflected toward the left. No purulent discharge nor shadow on transillumination at this time. Resection of middle turbinated bodies and removal of all tangible polyps. Much benefit. Some months afterwards, in November, 1897, he returned suffering from an acute influenzal cold, with pain and edema through the left cheek, conjunctiva congested and temperature elevated. Transillumination gave diminished clearness of the left side. Aspiration by Schmidt's needle in the middle meatus yielded a syringeful, $\frac{1}{4}$ c.c., of a clear straw-colored muco-serous fluid. This coagulated in part spontaneously, and, on being centrifuged, gave a residuum of one-eighth bulk, which microscopically showed a fibrous-like mass with a few epithelial and lymph cells. No cholesterin crystals. The supernatant liquid wholly coagulated on boiling. The urgent symptoms abated, but a few days later pus appeared in the middle meatus and an exploratory puncture yielded ordinary pus. Suppuration persisting, eventually an opening was made in the anterior wall. Palpation with the little finger disclosed nothing. Sinus moderately curetted. Complete recovery. Four years later the patient writes: "Discharge ceased and opening healed immediately after drainage tube was removed by you. No further discharge. Nose in good condition, plenty of breathing room, very little mucus discharge.

Semon¹⁹ describes a similar case in his own person, believing the muco-serum to have been free in the antrum, but others have interpreted his case as a cyst which had undergone sudden enlargement, and ruptured at the periods when he felt a free discharge and relief. In Case I the large amount of albumin and the lymph corpuscles would indicate a mucus rather than a cystic secretion and the fibrin indicates an inflammatory origin of the fluid. The question arises whether transformation from a muco-serous fluid to pus might not have been due to infection by the exploratory puncture, but in view of the fact that the puncture was made aseptically and that the many punctures to be recorded in Case II had no such effect, the suppuration must be ascribed to other causes inherent in the case.

Case II.—Mrs. C. S., aged sixty-two years, has had polyps removed from time to time. Examination October 23, 1900. Bilateral

multiple nasal polypi and consequent mouth-breathing, which is her sole complaint. No pain, sense of distension, purulent discharge or asthma. After the removal of several polyps it was seen that both middle turbinated bodies were greatly enlarged and in a state of polypoid transformation.

October 30.—The transillumination test shows the infraorbital crescent on each side diminished, but not in complete shadow, brighter on the right than on the left side. No pus in the middle meatus. Aspiration of the left maxillary sinus through the nasal wall in the middle meatus yielded a syringeful, 4 c.c., of a viscid transparent fluid, which was submitted for bacteriological examination.

November 13.—In order to free the upper part of the nostril of an impacted mass of polypoid tissue, to remove obstruction from the osteum maxillare and expose polyps attached to the borders of the hiatus, resection of the left middle turbinated body was made by the author's method, described before this association in 1891 in a paper entitled "The Radical Treatment of Nasal Polypus."

January 8.—Repuncture of the left antrum was now entirely negative, both on aspiration and irrigation. Improved clearness by transillumination. At the same sitting aspiration of the right maxillary sinus yielded a syringeful of similar fluid, this preceding any operating on that side except the snaring of a few polyps several weeks ago.

January 22.—The first puncture of the right antrum yielded two syringefuls, 8 c.c., of a clear, straw-colored, viscid fluid, which was submitted for both chemical and bacteriological examination. Aspiration through the inferior meatus yielded an additional half-syringeful of identical fluid, now blood-stained from previous punctures. Irrigation produced a counterflow through the osteum maxillare, but only under heavy pressure. It was thought that a few drops of the serous fluid could be discerned in the washings, but not showing like pus, it was difficult to tell.

January 29.—A second aspiration of the right antrum yielded a syringeful of very bloody fluid, probably made sanious by the leakage of blood into the sinus during snaring of polyps from the middle meatus three days ago or else by the puncture made a week ago.

February 5.—A third aspiration of the right antrum again yielded a clear serous fluid. A resection was now made of the degenerated right middle turbinated body with a large polypoid mass and polyp-buds attached.

February 25.—The fourth puncture test of the right antrum yielded only a few drops of a clear fluid mixed with numerous air bubbles.

March 19.—Aspiration and irrigation of both antra were now entirely negative. There was no discharge and no discomfort. It would seem that natural drainage of the maxillary sinuses had been restored by removal of obstruction from the nasal surfaces.

CHEMICAL REPORT.

The fluid had a slightly reddish tinge from the presence of a small amount of blood. On standing the corpuscles separated, leaving a thin colorless supernatant liquid. Chemical tests showed the presence of serum albumin as well as what appeared to be a trace of mucin, the amount of the latter substance, however, being too small for positive identification. The proportion of the serum albumin was not large, certainly not over one-fourth per cent.

(Signed) J. H. LONG,

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FIRST BACTERIOLOGICAL REPORT.

On December 11th we received a fluid removed by aspiration from the left antrum of Highmore. Direct cover-glass smear preparations show no bacteria, but two culture tubes contained good large colonies of *bacillus coli communis*.

(Signed) F. R. ZEIT,

First Asst. Dept. of Pathol. and Bacteriol., Northwestern Univ. Med. School.

SECOND BACTERIOLOGICAL REPORT.

Specimens stained for bacteria show very few isolated bacteria, cocci and single bacilli. Cultures: Smear inoculations were made on inclined agar, Löffler's blood serum and human blood serum. Some of the tubes remained sterile, in others a few scattered colonies appeared, cultivations from which resulted in the separation of four species, *micrococcus cereus albus*, *bacillus subtilis*, Friedlander's pneumonia bacillus and a small bacillus with the name not determined. (Here follow identification characteristics.) The cultures indicate that there was not a specific bacterium present. The species separated were not actively vegetative because they did not grow promptly. Pathogenous: A guinea pig was inoculated subcutaneously with 5 c.c. of the fluid, with negative result. Microscopic examination: Only a very few epithelial cells and red blood corpuscles are visible.

(Signed) ADOLPH GEHRMAN,

Bacteriologist to Columbus Medical Laboratory.

It is, of course, impossible to specify the exact condition within these sinuses. On the assumption of cysts, the clinical phenomena are more difficult to explain than in most other cases. The "serous disease" was bilateral, and if cystic they must have well filled the cavity on each side for the fluid was withdrawn from the left side at the level of the middle meatus and on the right side by repeated punctures at different locations in both the middle and inferior meatus. There were no signs about the gums pointing to dentigerous cysts. There was no distension. On the left side, if a cyst, it must have failed to refill after a single aspiration. On the right side, if a cyst, the irrigation counterflow through the hiatus and the

mixture of air bubbles with the fluid on the sixth aspiration are inexplicable. The fluid was, strictly speaking, muco-serous, but not the product of an acutely active inflammation, for it contained but a trace of mucin, few cellular elements and little or no fibrin. It resembled a cystic fluid except that it did not contain cholesterol crystals. It was so largely serous as to fall within the meaning of the terms "serous disease" and hydroph inflammatorius.

The diagnosis of a serous accumulation, without distension or deformity, must be based upon aspiration. The transillumination test is indecisive, although in both my cases the light transmission was distinctly impaired, while not constituting a distinct shadow. This, together with nasal polypus, degeneration of the middle turbinated body, ill-defined browache or sense of fullness in the cheek should suggest an exploratory puncture. To distinguish a free serous collection from a cyst may be quite impossible without a wide opening of the sinus and even then and at autopsy it has sometimes been impossible to determine the point. On transillumination a fully developed cyst is said to permit or even enhance translucency.²⁰ Lambert Lack²¹ reports perfect translucency when the antrum was distended by a mass of polypi without pus or other fluid. Muco-serous collections impair the translucency, but I judge the impairment would vary with the degree of thickening of the mucosa and intensity of the light.

The treatment is in part suggested by the success in Case II. Obstruction to the ostium maxillare should be remedied and to this end enlarged middle turbinated bodies should be resected and polyps removed. Noltenius drained the antrum by a large trocar opening in the inferior meatus. If cystic or if recovery has not ensued by suitable nasal treatment an opening in the anterior wall of the sinus sufficiently large for palpation and then curetting would seem to promise a cure and perhaps forestall what would ultimately become an empyema.

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TONSILLOTOMY RASH.*

BY WYATT WINGRAVE, M.D., LONDON.

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The occurrence of a skin eruption following operations, often referred to as "surgical rash," is familiar to all of us, but its association with the removal of tonsils and adenoids is perhaps not so widely recognized that a few notes may not be of interest.

Recent experiences of several instances prompted a reference to my hospital and private records which has revealed twenty-six cases in the course of seven years. Although relatively to the large number of operations this is but a small percentage, I feel from recent experience that they represent but a portion only of those actually occurring, and that a thorough and systematic inquiry would afford evidence of greater prevalence.

It is the custom at our hospital for all patients who are operated on in the extern department to attend, after a week's interval, for examination; and in several instances the parent has reported that the child was kept at home because it had a rash which was thought to be "something catching." Subsequent investigation, however, in most cases, proved its innocence of specificity. In other cases the rash was still visible on the patient and unattended by constitutional symptoms.

Of the twenty-six cases, three which were in-patients proved to be scarlet fever while one developed diphtheria. The remainder were simple non-specific cases.

Character of Rash.—The eruption generally appears on the 2d or 3d day, either papular, roseolar or erythematous in type. It most frequently attacks neck, chest and abdomen, sometimes extending to face and extremities. The earliest appearance noted is on the day following operation; the latest one is on the 6th day. Its duration is generally two or three days, but may extend to five days. After reaching its maximum intensity, it rapidly disappears without desquamation, but is sometimes associated with intense itching.

It may occur at any age—the youngest was fourteen months and the oldest twenty-three years.

With regard to sex, excluding the specific cases, sixteen were females and six were males.

* Paper read by title at the Twenty-third Annual Congress of the American Laryngological Association, held at New Haven, Conn., May 27-29, 1901.

As a rule there is but slight constitutional disturbance and the child does not appear to be any the worse. In those cases which I was able personally to investigate the temperature was increased 1° to 2° F.

Although the incidence of so innocent a complication in our most common operation may not be unfamiliar to many of us, I am not aware of any published references having been made to the subject. It is, however, a matter of some importance, since foreknowledge will help our diagnosis and prevent any undue precipitancy in forming the graver estimate of its nature.

The occurrence of scarlet fever in three cases and diphtheria in one has, however, an important practical bearing, inasmuch as the removal of actively inflamed tonsils is advocated by many surgeons.¹

There are distinct advantages in this practice, since the prominence of an inflamed tonsil affords facilities to the guillotine, which disappears on subsidence of the inflammation, and there do not appear to be any serious disadvantages. In the absence of any anesthetic the operation may certainly be more painful, but it most effectually relieves the temporary angina and the removal is thorough. It may happen that tonsillotomy may be undertaken in the early stage of recognized or unrecognized scarlet fever, diphtheria or other specific fever, and it is maintained by many eminent specialists that not only is no additional risk involved, but that it is an expedient course to take.² This may be so if the tonsils alone are removed, but one may presumably doubt the expediency when a large crop of adenoids requires removal in addition, since the formation of so extensive a denuded surface is not unattended with risk.

The incidence of a rash upon any solution in continuity of tissue, operative or accidental, is well known and has been well discussed, but there are a few points associated with this particular operation which may throw some light upon its pathology.

Examination of the blood during the week following the operation has, with few exceptions, afforded me evidence of an increase in number of the mononuclear white corpuscles. This leucocytosis, which rarely lasts beyond the tenth day, may be more than coincidental, yet it is hardly surprising after so great a disturbance of lymphoid structures. The removal of tonsils and adenoids affords a very large area for absorption of toxic matter.

Finally the rash may be interpreted as one of drug intolerance, since most of the cases were taking the usual prescription of sodium salicylate and potassium bromide.

The occurrence of a rash attending tonsillotomy is, I think, a matter of sufficient interest to justify a few remarks, and I trust that you will accept my apology should your experience in America have made you already familiar with the phenomenon.

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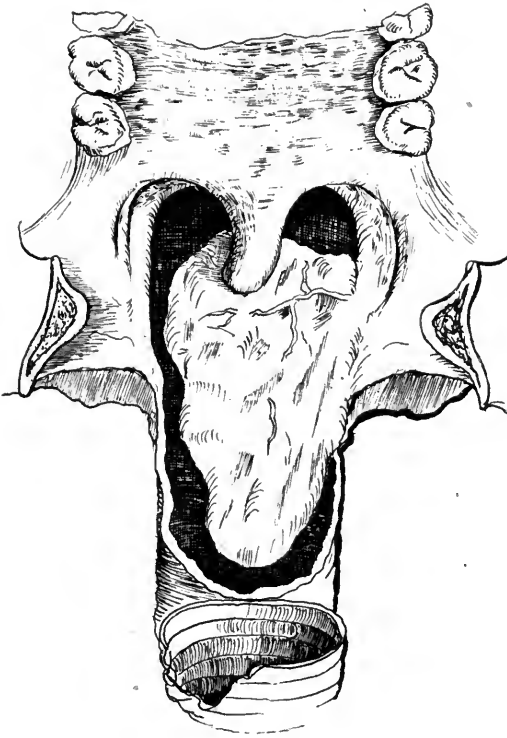
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REPORT OF A CASE OF MALIGNANT DISEASE OF THE TONSIL.

BY HAL FOSTER, A.B., M.D., KANSAS CITY, MO.

August 23, 1897, Mr. O. presented himself complaining of a large growth in his throat. The patient, a man aged sixty-five, was born in North Carolina, but had lived in Missouri since he was four years



old. His occupation was that of a carpenter. He was married and had lived in a small village all his life. Family history was good. He had always been hearty and strong, but had worked very hard at his trade. There was no evidence of a specific nature. His throat had never troubled him in any way—not even a tonsillitis. He did

not use alcoholic stimulants, but did smoke four cob pipes of tobacco daily for forty years. His tonsil began to enlarge about a year before I saw him. A physician applied pure carbolic acid, which resulted in no benefit.

After this treatment the tonsil grew very rapidly in size, so much so that it greatly interfered with eating. It never at any time pained him, but constantly felt as though a foreign body was in his mouth. There was no soreness or pain. The glands in the angle of the jaw were considerably enlarged. The right tonsil was very large, extending far across the middle line and nearly filling the patient's mouth. He talked with difficulty. His family physician had given him iodide of potash and mercury, with no effect on the growth. A small portion was removed and microscopically examined by a pathologist, who pronounced it cancer. The report was given to the patient and his friends. He was very much opposed to having the tonsil and glands removed from the outside of the neck, stating that he was too old.

They were anxious for me to give him temporary relief by removing the tonsil from the inside. Knowing that it would give him temporary relief and do him no harm, I consented to remove it.

August 25, 1897, assisted by Drs. Blair and Reyling, I removed it. I used every precaution to prevent loss of blood, on account of the disease and the age of the patient. I applied strong solutions of suprarenal capsule and cocaine by means of cotton applicators direct to the diseased tonsil thirty minutes before the operation.

A large Jarvis wire snare was used and the tonsil was rapidly removed. Applications of suprarenal capsule were immediately applied. The base was cauterized by the galvano-cautery. There was scarcely any blood lost during or after the operation. Antiseptic sprays were used and the patient was treated daily for two weeks.

The wound healed rapidly. He could eat and talk much better after the tonsil was removed. It was explained to him that the cancer would surely return. Three months later the tonsil began to enlarge slowly, but did not cause him scarcely any trouble, until two years later when he died from general infection.

I report this case in order to show the unusual large tonsil from malignant disease.

A CASE OF STENOSIS OF THE LARYNX FOLLOWING FRACTURES; OPERATION; RECOVERY.*

BY ARTHUR W. WATSON, M.D., PHILADELPHIA.

Fracture of the larynx¹ is such a rare accident and so often quickly fatal that cases of stenosis following such injury must be very few. For this reason it is hoped that these notes of a case, although showing no especially remarkable conditions, may be of interest. As so little is said of the later results of fracture of the larynx in works on laryngology and general surgery, and as the writer, in a somewhat hasty review of the later literature has been unable to find any similar case recorded, no conclusions as to the frequency of such conditions or the results of operative measures for their relief can be drawn.

The patient, W. C. F., a boy of sixteen years, on May 6, 1899, while riding his bicycle ran into the tail-board of a wagon, striking the neck over the thyroid cartilage, and sustaining a lacerated wound beneath the chin. He went to a nearby hospital where three stitches were put in the chin cut. He was then allowed to go home. The voice was lost immediately after the accident, and he had cough with bloody expectoration, but no dyspnoea. He had also inability to swallow, the food and fluids regurgitating. Pain was slight. The cough and bloody expectoration lasted three days. When he became able to swallow, food would enter the larynx causing paroxysms of coughing.

About six weeks after the accident the patient began to have difficulty in breathing, which increased up to July 14th, when he was taken to Dr. John A. Hearst, of Germantown, who, on the same day, brought him to me.

The condition as noted at the time was as follows:

The patient is pale and anxious-looking; skin bathed in sweat, all mucous membranes pale, pulse weak and rapid, breathing labored and stertorous, the slightest exertion producing increased dyspnoea. The voice is reduced to a hoarse whisper. Examination: Externally some flattening of the thyroid angle, and a recent scar beneath the chin. Laryngoscopy shows: Adhesion between the ventricular bands to within a short distance of their posterior extremities, leaving

* Paper read at the Twenty-third Annual Congress of the American Laryngological Association, New Haven, Conn., May 27, 1901.

a small opening posteriorly. The supra-arytenoids are drawn together and inwards. The vocal cords cannot be seen.

It was supposed from this examination that the adhesion was the whole cause of the difficulty, and accordingly, under cocaine, the adhesion between the ventricular bands was cut. About one-half was found to be membranous, but anterior to that the knife encountered a mass of dense tissue filling the anterior part of the larynx. The breathing was only slightly relieved. A few days later an intubation tube was introduced, the largest size of O'Dwyer's set. This tube was kept in the larynx until August 24th, when a larger hard-rubber tube was introduced. This tube was kept in until September 5th, but during this time was frequently expelled. On the last date a still larger metal tube was introduced, which proved more satisfactory. It was kept in until October 10th.

But after all this time it was found that no real improvement had been made, as the dyspnoea returned as soon as the tube was removed. It was decided, therefore, to do something more radical. The boy was admitted to the Polyclinic Hospital and a preliminary tracheotomy was done on October 10th. A week later he was sent home wearing the tracheal tube. On the fifth of November, the patient again having entered the hospital, the operation of laryngofissure was done. The patient being etherized an incision was made over the larynx from the hyoid bone to below the cricoid cartilage. The thyroid cartilage was incised in the median line, but the mucous membrane was divided from within, the knife entering below the vocal cords, great care being taken to make the division accurately between them. When the wings of the thyroid were separated it was found that from the thyroid notch to below the vocal cords the cartilage was about a quarter of an inch thick, the thickened portion extending backward about a third of an inch, pushing the ventricular bands upward and the anterior commissure of the vocal cords backward. By the release of the tissues in front the arytenoids became movable. The redundant cartilage was cut away from the wall of the larynx and then shelled out without injury to the soft parts within. In closing the thyroid a catgut stitch was passed through the cartilage and through the ends of the vocal cords and tied. The skin wound was sutured. On the day after that of the operation the voice and laryngeal breathing were good, but later the voice was partially lost and the breathing became less free, on account of the swelling. The patient was allowed to go home on the 13th, still wearing the tracheal tube, but kept under observation. After healing of the parts the vocal cords could be seen to move freely. The swelling of the membrane did not entirely subside for some time, so that the tracheal tube was retained, although it was worn corked part of the time. Later, however, after the tube had been kept corked continuously for about two weeks, it was removed and the tracheal opening allowed to heal. At present the voice is clear and strong and the breathing perfectly free, the boy being able to work and otherwise do as he pleases.

126 South Eighteenth Street.

EARLY TREATMENT OF MASTOIDITIS.*

BY CHARLES W. RICHARDSON, M.D., WASHINGTON, D. C.

The question that first suggests itself in the consideration of this subject, the early treatment of mastoiditis, is, In what stage of the suppurative otitis is it proper to consider that the time for this early treatment of the mastoiditis has arrived? This question will be answered by different clinicians according as their views differ as to the limitation of the suppurative otitis and mastoiditis. To the pathologist there is no limitation, for, as is well known, in many cases of suppurative otitis there is in the beginning the presence of pus in the antrum mastoidium, although without a necessary infection of the mucosa or the formation of an abscess within the mastoid. As in many cases of suppurative otitis, with an antrum and cells more or less subjective to the irritation of a purulent discharge surcharged with infective micro-organisms, we have the possibility of infection of the mastoid, therefore we must consider that the early treatment of mastoiditis is to commence with the purulent invasion of the tympanum or attic cavities.

The first and most important indication in the early treatment of mastoiditis would be the early and free incision of the tympanic membrane. The experienced otologist can determine in the majority of cases of infection of the tympanic cavity, immediately after examination and grouping together the symptoms, whether the case is going to terminate as an acute inflammation or suppurate. It is useless to resort to palliative remedies in hopes that the case will subside without suppurating and perforation. It is cruel to allow those individuals to suffer continuously for hours, as well as permit pent-up pus loaded with infectious micro-organisms to continue their destructive activity, when free and early incision not only relieves pain, but limits inflammatory activity and affords an egress for this infective material. The incision through the membrane should be liberal.

The second important indication is rest. I am afraid that too little stress and importance is given to this point in the treatment of these cases. I consider this point of grave importance. Patients

* Paper read at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otolological Society, New York, May 23-25, 1901.

should be commanded to go to bed and should there remain until all pain has subsided, until the temperature has been normal for several days, and until all tenderness on pressure has disappeared. As secondary indications under this heading, we would suggest the feeding, which should be of a liquid character, and the maintaining of a free condition of the bowels.

The third indication is the care of the purulent discharge. So far as my experience goes, I find that the frequent but gentle irrigation with sterile water, at a temperature of 110 degrees Fahrenheit, not only answers the purpose of removing the purulent discharge and lessening the activity of the micro-organisms, but also gives the greatest comfort to patients. I believe that the less meddlesome we are during the first forty-eight hours, the better progress our patients make.

The fourth important indication is to prevent infection of the mastoid or arrest it when it has taken place. This indication is best met by the continuous and persistent application of ice over the mastoid. I prefer the ice bag to the Leiter's coil, as the apparatus is more manageable and the degree of temperature is more evenly maintained. In many cases there is more or less tenderness over the mastoid or about the tip, indicating the necessity of limiting the inflammatory changes within the process. In these cases there is no question about the urgent demand for the use of external cold. It seems that the routine practice of the use of external cold would be of material advantage in all cases. Many cases come under our observation after several days of duration, wherein the perforation has spontaneously taken place, in which the purulent discharge is abundant, the mastoid tenderness is great, and with considerable elevation of temperature. These cases should be treated along lines above indicated, with enlargement of the perforation if necessary, and with persistent and continuous application of ice. The use of ice should be continued as long as there is evidence of improvement. Should the purulent discharge show a lessening and alteration in character, the temperature curve diminish, the expression of the patient show improvement and sleep be more continuous, and the tenderness show lessened intensity or diminished area, the ice should be persisted until complete relief is obtained. On the other hand, should the tenderness show no abatement, the discharge no diminution, the temperature remain elevated, the expression of the patient show no improvement for a period of forty-eight hours after the application of ice, radical intervention becomes essential. The development of edema of the tissues over the mas-

toid or sinking of the posterior superior wall of the auditory canal, indicates the presence of purulent accumulation within the cells, necessitating a radical intervention at once. One should be extremely cautious after the application of the ice, in summarizing the symptoms, not to give too much importance to the apparent improvement in the less essential symptoms, for in so doing one is apt to be badly misled. The symptoms to which the greatest weight should be attached are the lessening and diminution of tenderness to pressure, and the improvement in the character of the discharge. I have several times seen complete subsidence of marked edema, lowering of temperature, and complete abatement of spontaneous pain after application of ice for twenty-four hours; yet on doing the mastoid operation next day have found necrosis of the outer table of the mastoid, with extensive destruction of cellular structure, and cavity filled with pus. I should consider the continuous use of ice to be of greatest value in all recent cases before infection of antrum or cells has taken place, and in those cases of apparent infection in which the discharge is not very copious and muco-purulent in character, and in which the temperature is high. I should consider the earliest treatment for those cases, coming under our observation, with profuse purulent discharge, sinking of the posterior superior wall of the auditory canal, and edema over the mastoid, to be operative intervention at once.

THE PRODUCTION OF LOCAL ANESTHESIA IN THE EAR.

BY HOMER DUPUY, A.M., M.D., NEW ORLEANS, LA.

Assistant Surgeon Eye, Ear, Nose and Throat Hospital, New Orleans.

It is universally admitted that in all operative procedures on the drum membrane the patient is subjected, even though it be of short duration, to agonizing pain.

The pain and shock which accompany surgical work on the ear are now intensified, for the reason, that since a few years, the inadequate simple puncture of the drum has been superseded by the more rational, and certainly more painful, procedure of a *free incision*.

To incise the tympanic membrane, at the best point for drainage purposes, with the ordinary cocaine solutions, thus far used, and recommended by aurists, is, in most cases, an utter impossibility. These solutions do not penetrate an inflamed drum sufficiently to produce that degree of anesthesia required for such delicate, and oftentimes life-saving, surgery. Even the most courageous patients will move at the important moment, with the result that we *sometimes* incise at the point of selection, but *oftener* positively fail.

Every aurist appreciates the difficulties which encompass him on such occasions, and to resort to general anesthesia every time a tympanotomy is performed must, for many reasons, prove inadvisable and inexpedient.

Therefore, any solution which produces complete anesthesia of the drum membrane, and contiguous parts, will fill a long-felt want in aural surgery. It does seem that we are now in possession of this ideal solution.

To Dr. Albert Gray, of England, is due the credit of discovering that a mixture containing: Cocaine, 5 to 10 parts; absolute alcohol, 50 parts; anilin oil, 50 parts, will penetrate the drumhead so rapidly, and so thoroughly, that complete anesthesia is produced in a few moments.

The clinic of the Eye, Ear, Nose and Throat Hospital afforded exceptional opportunities for testing the value of this solution. With the assistance of Drs. Gordon King, A. B. Gaudet, and L. De Poorter, I have recorded fifty cases of acute otitis media in which tympanotomy was performed under this local anesthetic.

Of these cases, thirty received my personal attention. In my first three cases I used a solution containing 10 parts cocaine, 50 parts each of the other ingredients. So complete was the anesthesia that in each instance, while I made a free incision of the drum, the behavior of the patient proved a *prima facie* evidence that there was freedom from pain. Inquiries relative to this point confirmed the observation. But in my fourth and fifth cases I did not obtain this happy result. These two failures induced me to increase the cocaine to 15 parts, which solution I used in a series of ten cases, complete anesthesia being effected in every instance.

In my sixteenth experiment I used the solution of 15 parts cocaine; on touching the drum with the point of the knife, a practice I always adopt before incising, patient resisted, saying it was painful. I did not incise, but allowing about fifteen minutes to elapse, I then instilled a solution of 20 parts cocaine, which proved highly effective, the patient experiencing neither pain nor toxic effects of the drug.

In a series of fourteen cases complete anesthesia was induced with the solution containing 20 parts cocaine, 50 parts each of absolute alcohol and anilin oil. The record of the other twenty cases, operated by my colleagues in the hospital, shows that in every case, but one, the above solution met all the requirements.

It does seem sound logic to infer that if this mixture acts thus on an inflamed and a thickened membrane, it must readily penetrate non-inflamed tissue. Corroboration of this is furnished by two cases of chronic non-suppurative otitis media, in which Dr. King and myself, separately, performed ossicectomy. In both cases there was absolute freedom from pain.

Such rapid and deep penetration of solutions containing respectively about fifteen and twenty per cent cocaine would seem to increase the danger of drug poisoning. The fifty cases recorded by me do not bear out this inference, for in only *one* instance were any untoward effects noticed, and these were not of a serious nature.

It will be of practical interest to briefly indicate the physical processes upon which depend the penetrating powers of this solution.

Dehydration of the outer layers of the drum membrane is essential in order to effect penetration.

By the abstraction of water from the tissues they contract, leaving interstices through which the fluid passes to the deeper layers, finally reaching the nerve terminations in the innermost layers.

Osmosis, also, plays an important part in this process of rapid penetration.

Now, alcohol and anilin oil are both dehydrating agents, with this difference: that while the latter dehydrates, and is absorbed

more slowly, its effects last longer. The high volatility of the alcohol, and the slow absorption of the oil, concur in producing rapid, yet lasting anesthesia.

In conclusion, I wish to emphasize several points relative to the manner of applying the solution.

As a preliminary step the instillation of hydrogen dioxid in the meatus is very effective in softening and dislodging the loose epithelial tissue on an inflamed drumhead.

The removal of these desquamated cells from the outer surface of the drum, and the washing away of other detritus in the canal, by means of the usual syringing with a warm antiseptic solution, are very important procedures, for the reason that the parts will then offer less resistance to the penetration of fluids.

The next, and all-essential point, is to *fill the external meatus with the solution*.

This is highly important, otherwise osmotic equilibrium is soon established and penetration ceases.

With the patient's head in the usual position of inclination to the opposite side about ten or fifteen minutes must elapse when anesthesia is generally completed.

As most of the anilin oil on the market is dark in color, it will be necessary to dry the canal with a cotton-tipped probe, or pledgets of cotton, so as to have a clear field.

I deem it a good practice before incising to make sure that anesthesia is completed by touching the drum at the selected point with the tip of the knife.

The final deduction from my experience with the anesthetic mixture is, that the solution containing 20 parts cocaine gives the most satisfactory and uniform results.

CLINICAL NOTES ON ADRENALIN.*

BY NORTON L. WILSON, M.D., ELIZABETH, N. J.

Ophthalmologist, Laryngologist and Otologist to the Elizabeth General Hospital at Elizabeth, and St. Luke's Hospital, Bayonne, N. J. Fellow New York Academy of Medicine, American Medical Association, etc.

During the summer of 1900 Dr. Jokichi Takamine informed me that he was endeavoring to separate the alkaloid or active principle of the suprarenal gland. In October of that year I called at his laboratory and saw what the doctor designated the blood-pressure raising principle of this gland. He submitted to me, for inspection, a grayish-white powder, which, under the microscope, showed needle-shaped crystals.

It was sparingly soluble in water, but dissolved readily in dilute acid. A solution of one to ten thousand parts in water was made and dropped into the doctor's eye. He assured me that he had himself introduced it into his own optic on several occasions without injury. In its basic form it absorbed oxygen from the air so rapidly that it was necessary to make a salt of it, and for this purpose hydrochloric acid was added, and as a result thereof there was obtained a chloride.

The active principle thus isolated had not then been named. Upon the suggestion of the writer the name "adrenalin" was given to the newly-discovered product, and under this name it is placed upon the market by its manufacturers, Parke, Davis & Co.

Three solutions were made; one of one part to ten thousand; one of one part to five thousand and one of one part to one thousand. At present the only solution manufactured is that of one of one part to one thousand. To these solutions of adrenalin chloride the manufacturers have added one-half of one per cent of chlore-tone, for which they claim a slight anesthetic and antiseptic action.

It is also manufactured in tablet form with sodium chloride, and in this form tartaric acid is used instead of hydrochloric acid, making it a tartrate of adrenalin. The tablets are very soluble in water, and when added to one drachm of water make a solution one to one thousand. In this form they are most convenient for use. In the form of solutions contaminations soon follow, especially if a drop-

* Read before the American Laryngological, Rhinological and Otological Society, New York, May 23, 1901.

per is frequently introduced. Sterilization can be effected by boiling without apparent injury to the solutions, but the tablets are more desirable because they can be used from time to time as occasion requires for making fresh solutions in small quantities.

It is unnecessary to furnish you with a tabulated statement of the number of cases in which the writer has used adrenalin.

It has been used freely by him in cases affecting the eye, the nose, the throat and the ear. For the eye he has used the solutions of one part to ten thousand and of one part to five thousand only, reserving that of one part to one thousand for the nose, throat and ear.

His experience shows that one drop instilled into the eye produces a slight smarting sensation for about twenty seconds, during which time there is a noticeable hyperemia of the conjunctiva. This soon disappears and the blood is rapidly driven out of the vessels. In forty seconds the entire conjunctiva is blanched almost white. This anemia is not only present in the ocular conjunctiva, but also in the palpebral. This marked contraction of the blood vessels lasts about one hour, after which time the vessels gradually resume their normal appearance. The use of these solutions has shown no appreciable effect upon the cornea or pupil. No drying of the epithelium of the cornea, like that produced by cocaine, or dilatation of the pupil has been observed, and no anesthetic properties have manifested themselves. So far as could be noticed the sympathetic nerve was not stimulated and the palpebral fissure remained unchanged, while the tension of the eyeball was neither increased or diminished. As a result of its use cocaine or holocaine anesthesia is much deeper than it otherwise would be. This was first noticed in making iridectomies. This is due, it is believed, to the depletion of the vessels and the opportunity offered the anesthetic to penetrate the tissues.

In acute plastic iritis a more rapid and decided effect will be obtained from the use of atropin by the application of a few drops of adrenalin.

The writer has used it with success in the removal of pterygium, lipoma, chalazion, squint operations, foreign bodies under the conjunctiva, and especially in the dilatation of the lachrymal duct. In acute contagious or chronic catarrhal conjunctivitis he has found it to be of little or no permanent benefit.

Your attention is especially called to its application to the nose and throat. If applied to the interior of the nose it blanches the membrane almost immediately. In the examination of the naso-

pharynx it will be found to be of great assistance because it contracts the tissue of the turbinates so thoroughly as to enable one to look through the nostrils into the naso-pharynx. In profuse bleeding it is of little use as it is rapidly washed away, unless a soaked pledget of cotton is packed into the nostril. After a few minutes the cotton may be removed and the hemorrhage will have ceased, especially those annoying hemorrhages from the septum.

In acute coryza it will relieve the swelling of the turbinates almost immediately and stop the profuse watery discharge. For temporary relief in hay fever it has no equal and is less apt to produce irritation than the solutions of the suprarenal gland.

In a case of acute laryngitis, coming under our observation, where there was a loss of voice and considerable pain during the act of deglutition, the voice was restored in twenty-four hours and the pain very materially lessened with five applications of the spray.

In acute pharyngitis and tonsillitis the relief is immediate and more lasting if its use is combined with that of cocaine or eucaine.

Every operation within the nasal chambers can be made bloodless, or nearly so, by the use of adrenalin, but it must not be forgotten that within an hour thereafter there will follow some bleeding. The bleeding will be no more than it would have been during the operation if adrenalin had not been used. If you desire to control the hemorrhage you must give the patient a solution (one part in five thousand) to be used at home for two days.

In la grippe and other acute inflammations of the nasal mucosa, where the outlets to the accessory sinuses are occluded, it is valuable in relieving the swollen mucosa and thus draining the sinus. In operations affecting the ear, the writer's experience with adrenalin has been limited to the removal of polypi and granulation tissue, except in those cases where he has passed a few drops into the Eustachian tubes for the purpose of facilitating the introduction of a bougie.

Adrenalin is best used in combination with cocaine or holocaine by first applying the former, followed immediately by the cocaine. I have never seen a case of cocaine toxemia when used with adrenalin.

It can be boiled and thus made sterile. It does not interfere with any other treatment which may be desirable as supplementary. Its use keeps the field of operation free from blood.

It is more certain in its physiological action because you can graduate the dose.

It is clean, being free from foreign matter, and thus the preparation is more stable and less likely to decompose.

I do not use it in powder form, as it causes sneezing and is much more irritating than the solution.

So far as has been observed no harm has come from its liberal use and the writer believes that it is a most valuable addition to our pharmacopœia.

In conclusion, I ask your indulgence while I briefly describe two cases where adrenalin was administered internally with good effect. Incidentally it may be said that the best way in which to secure good results is by absorption from the mucous membrane of the nose or mouth and not by the stomach.

The first case to which your attention is called was one of scurvy with profuse hemorrhage from the nose which had been previously packed and which had continuously oozed during the twenty-four hours preceding the time when the patient was seen by the writer.

Ten drops of the solution of one part to five thousand was put into his mouth every hour until thirty drops had been absorbed when the hemorrhage ceased and the packing was removed.

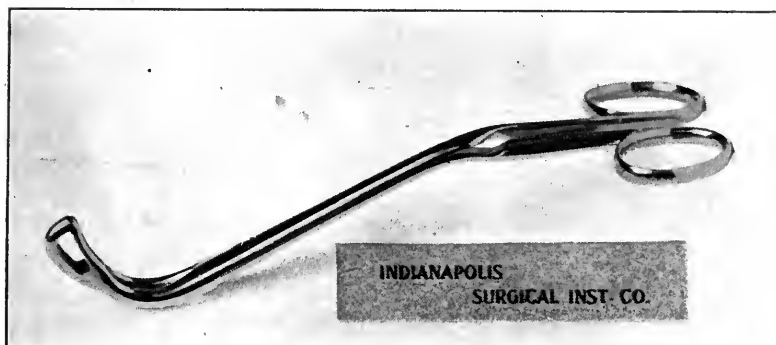
The second case was that of a pregnant woman having a profuse hemorrhage from the nasal septum of the right side. This was controlled with a Simpson's compressed cotton tampon. At the end of a week the hemorrhage occurred in the left nostril, the control of which was attempted in the same manner, but there was a continual ooze, and the patient was very weak from the loss of blood. She complained so bitterly of the pressure of the tampon that resort was had to ten drops of the solution of one part to one thousand. This was put into her nose four times a day. The hemorrhage promptly ceased, the tampon was removed, and fearing a return of the bleeding adrenalin was dropped into the nostril for several days.

There have been no more hemorrhages.

A NEW CUTTING FORCEPS FOR OPERATING IN THE POST-NASAL SPACE.

BY WILLIAM F. CLEVINGER, M.D., INDIANAPOLIS, IND.

Taking the various pathological conditions found in the nasopharyngeal space requiring operative procedures, we have, generally speaking, to choose between the cutting forceps and the curette. We all know that the curette is applicable to the soft adenoid tissue, but it is questionable if it is the proper instrument where there is a genuine hypertrophy of the tonsil fibrous in character. Personally I think it a practically useless instrument in the above-mentioned condition. The question then arises regarding a forceps. Undoubtedly the most frequently used and advocated forceps is the Gradle,



but there are, in my opinion, some points about this forceps that may be improved upon, such, for instance, as the curve, which is entirely too short to reach the vault in many adult cases. The handle is plain, without thumb and finger holes, making it difficult to manipulate.

Numerous other forceps on the market have so little cutting surface that many pieces must be removed, hence making the operation tedious and in every way undesirable. Again almost all are

made so close between the blades that it is difficult to operate without injuring the uvula.

Taking a number of instruments I have tried to improve upon other points that I regard as being especially undesirable. The



forceps, of which there is a cut below, I have designed for operating on a certain class of adult cases where there is a high vault and in which there is a fibrous tonsil.

Such cases can only be satisfactorily treated by removing the gland, and but little satisfaction is obtained unless a clean operation is done. It has been my experience that such a result is most difficult to obtain with the average cutting forceps found on the market.

The Indianapolis Surgical Instrument Company are makers of this instrument.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting May 22, 1901.

W. K. SIMPSON, M.D., Chairman.

Epithelioma of the Larynx.

DR. FRANCIS J. QUINLAN presented a specimen of epithelioma of the larynx. It sprang from the posterior wall and was not visible at first sight, so that it was suspected that the woman was a malingerer, she having at that time but one symptom, dysphagia. As the growth was of the inoperable type it was thought best to ligate and excise the carotids by the method of Prof. R. H. M. Dawbarn. The procedure consists in tying all of the branches of the external carotid. At the operation an anomaly of the bifurcation was present, so that many branches of this arterial supply could not be included in the ligature. The growth increased rapidly in spite of the operation, and the woman had died of exhaustion. Dr. Brewer, of the City Hospital, had operated upon four cases of this class of tumor within the past six months, and all the growths have shown a remarkable degree of atrophy. The operation on this patient was done by Dr. Collins.

DR. W. K. SIMPSON said that Dr. Brewer had operated upon one of his cases, with the result that there had been an exceedingly rapid decrease in the size of the epithelioma. Subsequently the growth had increased, and the final outcome of the case was not known. He was inclined to think that there was a future for this operation.

DR. M. D. LEDERMAN referred to a case of small round-cell sarcoma of the nose, which had been operated upon by Dr. Dawbarn. After ligating the external carotid on one side the tumor had shrunk remarkably within a period of two months. The growth had been subsequently removed along with the maxilla. In spite of the ligation of both carotids there had been considerable bleeding at the time of this last operation.

DR. J. W. GLEITSMANN asked if there was one authentic case on record in which a true carcinoma, not sarcoma, of the larynx had been permanently cured simply by ligation of the external carotids.

DR. QUINLAN said that Dr. Dawbarn now had under observation

four or five cases. The diminution in the size, the restoration of function and the general improvement in the patients showed that much good had been accomplished in this otherwise hopeless type of cases. This operation had been abandoned by Dr. Bryant many years ago, and great credit was due Dr. Dawbarn for having not only revived this operation, but improved and carried it forward so enthusiastically in spite of much adverse criticism.

Angio-fibroma of the Nose.

DR. JAMES E. NEWCOMB exhibited a drawing which Dr. Jonathan Wright had had made for him of a specimen taken from one of his cases. The patient was a boy of twenty-one, who for seven months had simply complained of nasal stoppage. On the first examination there seemed to be hanging from the left middle turbinate an ordinary polyp. At the first attempt to remove the growth with a cold wire snare it had pulled the wire out of the canula, and on the second attempt the wire had broken through. At a subsequent attempt a small piece had been removed, but its removal had been attended by extremely profuse bleeding.

DR. JONATHAN WRIGHT said that the growth was an extremely rare one in his experience. Many reported cases of fibroma had more or less glandular tissue and blood vessels in them, and were really instances of fibrous hypertrophy. The case now under discussion, and one presented some years ago by Dr. Knight, were the only examples of true fibroma of the nasal cavity of which he had any knowledge. The growth had been supposed to be malignant, but there was nothing of that character about the fragment of tissue removed.

Hypertrophy of the Lingual Tonsil.

DR. W. K. SIMPSON exhibited a specimen of hypertrophy of the lingual tonsil. He had removed it from an adult male about two weeks ago, and presented it because of its large size. The same patient had had removed extensively hypertrophied adenoids and faucial tonsils, showing that the whole chain had been affected. He had removed the specimen with a large lingual tonsillotome, and as he had used adrenalin there had been practically no bleeding.

DR. BEAMAN DOUGLASS presented a man having carcinoma of the accessory sinuses, probably beginning in either the ethmoid or the antrum. When first seen there had been a suborbital growth on the left side and the left nostril had been obstructed by a polypoid growth. On removing one of these an apparently malignant growth had been disclosed. Further examination showed entire destruction

of the lateral wall of the nose. The superior maxilla was perforated by the growth. Under ether, the growth was scraped out, an opening made and the entire antrum scraped out. The ethmoid cells were also found infiltrated. The curettage was carried backward as far as the sphenoid. The rapidity of development was interesting, the patient having suffered pain only three or four weeks. Three days after having been scraped out, the whole portion not packed with gauze had been filled with a recurrence of the growth. From the fact that the ethmoid and sphenoid were both affected there seemed to be no advantage in further surgical intervention.

A Case of Acquired Syphilis.

DR. BEAMAN DOUGLASS presented a girl, eight years of age, showing the ravages of acquired syphilis. According to the history, a syphilitic in the same house had used a towel which had afterward been used by the child after she had picked her nose. The whole mouth was deformed and the lip everted. The whole palate and septum had ulcerated away, and the nose and mouth were one cavity. From the use of peroxide of hydrogen and local applications of black wash and calomel satisfactory progress had been made. In such cases the immediate effect of plastic surgery was good, but all the benefit thus obtained was usually lost subsequently.

DR. J. E. NEWCOMB said that he had had this child at one time under his care, and had been unable to obtain any definite history. The child had been placed on the iodide; later on, mercurial inunctions had been used, with peroxide of hydrogen and black wash locally. She had failed to improve, and he had become convinced that the child was not getting her medicine regularly and was generally neglected. Those in charge of the child would not consent to her removal to a hospital. The last time he had seen her had been about two months ago, and then the lip had not quite sloughed through, but there had been a sloughing ulcer reaching nearly down to the vermilion of the lip. The appearance of the nose had been then very nearly what it was now, and the probe had detected a loose sequestrum, which had afterward separated. He had looked upon the case as one of inherited syphilis.

DR. GLEITSMANN spoke of an obstinate case of this kind which had been greatly benefited by a friend who had made use of sub-muscular injections of insoluble salts of mercury, given once a week. He would suggest that this treatment be used in the case under discussion.

Orbital Abscess.

DR. W. N. HUBBARD presented a patient with an orbital abscess, which had developed after an attack of tonsillitis. The latter had

commenced on April 10th, and after four or five days the upper lid of the right eye had begun to swell. About April 25th there had been considerable periostitis at the margin of the orbit, and finally an abscess had formed. This had been opened, and a drainage tube inserted into the ethmoid cells. The abscess seemed to have originated from infection transmitted through the anterior ethmoidal foramina. Apparently there had been no involvement of the frontal sinus. The operation had been done about four weeks ago, and after this there had been marked exophthalmos, but it had subsided after some days. The patient had been taking care of a child who had developed a scarlatina a few days after the tonsillitis had appeared.

DR. JONATHAN WRIGHT said that he had seen one case in which infection of the antrum had followed an attack of quinsy sore throat. It would be interesting in the present case to see if recovery would ensue without a radical operation. Certainly spontaneous recovery seemed very problematical. A very large proportion of the cases of sinus disease certainly recover spontaneously, and some of the chronic cases, yet in this case it seemed probable that it would be necessary to raise a flap and scrape out a new passage into the cells.

DR. SIMPSON remarked that from the acuteness of the attack, and its association with tonsillitis, he was disposed to think it was an example of infection with the influenza bacillus.

Tumor of the Larynx.

DR. A. B. DUEL presented, through the courtesy of Dr. Poor, of Orange, N. J., an Italian, thirty-four years of age, a hatter by occupation. There was no family history of tuberculosis and an uncertain history of syphilis. In June, 1900, he had had an attack of hemoptysis, and in January of the present year the voice had become husky. In March he had become completely aphonic. He had taken as high as three drachms of iodide daily. On May 14th to 16th he had had an acute hemoptysis, and an occasional moist rale had been audible at the apex. There had been a slight febrile movement. Examination showed a large tumor in the larynx below the left vocal cord, and this had not apparently decreased under the iodide treatment.

DR. WOLFF FREUDENTHAL said that at first glance this case had impressed him as tuberculous. The lesion in the larynx showed infiltration of both ventricular bands, and there was a spot below the glottis.

DR. WRIGHT said that it seemed very singular that the larynx should be pushed over to the side on which the tumor was. Possibly

the growth was principally behind and it pushed the posterior border of the thyroid cartilage over, thus turning the larynx on its vertical axis. There was a white spot below the cord that might be a gumma or simply an anemic spot.

DR. SIMPSON said that, in his opinion, there were a great many instances in which, from the mere appearance, it was impossible to make the differentiation between tuberculosis and syphilis. The hemoptysis, loss of flesh and the slight fever all pointed towards tuberculosis in this case.

Tuberculosis of the Larynx.

DR. W. K. SIMPSON presented a young woman whom he had had under observation since last October. He looked upon the case as undoubtedly one of tuberculosis of the larynx. It was interesting because one process in the larynx was in excess of that in the chest. She had had attacks of cough with emaciation, and had recovered from them. Last October her voice had become aphonic, and examination had shown slight ulceration of the left vocal cord. It had gone on to extensive ulceration and swelling of both arytenoids. She had had occasional cough, but no pain and no hemorrhages. Her chest had been repeatedly examined by experts, but it was only a week or two ago that any change in the apices of the lungs had been found. A recent examination showed tubercle bacilli in the sputum. She had been taking internally very large doses of creosote along with Russell's emulsion, and her general condition was decidedly better. The creosote was taken in capsules, two capsules containing five grains each being taken at a dose, and followed by a glass of milk.

DR. FREUDENTHAL said that the deep coloring of the larynx, together with the marked anemia of the epiglottis, gave a clear picture of tuberculosis of the larynx.

DR. BEAMAN DOUGLASS said that he did not believe in the existence of primary tuberculosis of the larynx, except as a result of direct infection by instruments. He recalled some cases which he had intended to present to this Section as examples of primary tuberculosis. Several pulmonary experts had examined them, and had confirmed this view, yet the patient had died unexpectedly, and at the autopsy the lungs had been found absolutely riddled with miliary tubercles which had not been detected by the physical examination.

DR. WRIGHT said that at least two cases were on record in which persons had died from some other disease, and the examination had

shown a primary tuberculosis of the larynx without any involvement of the lungs.

DR. GLEITSMANN reported two cases in which he had cured the laryngeal and the pharyngeal tuberculosis. No tuberculosis of the chest had ever been found. One had been cured for three years, and the other for twelve years, and both patients were in better health now than ever before. If a person lived in perfect health for so many years he contended that this was good proof that the tuberculosis had been primary in the larynx. This mode of proof was comparable to that generally accepted in the case of cured cases of cancer.

DR. WRIGHT said that it was not uncommon for pulmonary tuberculosis to be recovered from, while it was exceedingly uncommon for recovery to take place from laryngeal tuberculosis. It was possible, therefore, in the cases reported, that there had been a slight pulmonary tuberculosis which had also been recovered from spontaneously. Even with an autopsy it was usually impossible to say whether the tuberculous process had developed first in the larynx or in the lungs.

DR. GLEITSMANN spoke of the use of tubercle serum for establishing the diagnosis of tuberculosis. The patient should rest for two or three days and the temperature be taken every two hours. A tuberculin injection should then be made, and the temperature watched closely. If previous physical examination of the chest had revealed a suspicious spot with rough rales, the tuberculin would probably bring out moist rales at this spot. Another test not very well known was the application of a solution of methylene blue to the larynx in the strength ordinarily employed for staining. The color would be quickly absorbed in spots which had lost their epithelial covering.

DR. WRIGHT thought it was a fact that a case of pulmonary tuberculosis might recover and give no symptoms for years, and still carry around tuberculous glands which would cause them to react to tuberculin. Under such circumstances it could hardly be considered fair to look upon such a case as clinically tuberculous because of the reaction to tuberculin.

DR. GLEITSMANN replied that it was certainly true that a reaction with tuberculin might only mean that there was some tuberculous tissue in the person's system, but this admission did not vitiate his contention about primary tuberculosis of the larynx.

DR. BEAMAN DOUGLASS said that, according to his experience, Löffler's solution of methylene blue readily stains the normal tissues of the larynx, and this being the case the methylene blue test mentioned by Dr. Gleitsmann would not be of any value.

DR. M. TOEPLITZ referred to two patients having ulcerations in the larynx, but no lesions in the lungs, thus leaving him in doubt as to the diagnosis. A great many examinations had been made by himself, and in only two had he found any tubercle bacilli, and then only a very few.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

The Twenty-third Annual Congress of the American Laryngological Association was held in New Haven, Connecticut, May 27, 28 and 29th, 1901.

THE LARYNGOSCOPE presents herewith authors' abstracts of the papers of this meeting.

Chancre of the Tonsil, with Report of Thirty-five Cases—JOHN

EDWIN RHODES, M.D., Chicago.

The author refers to Bulkley's collection of 9,058 extragenital chancres, including fifteen cases occurring on the tonsil that were seen by Bulkley.

C. M. Hopmann's presentation of the subject in Heymann's *Handbuch der Laryngologie* is also considered, and Muenchheimer's record of 10,265 extragenital chancres, including Bulkley's list is mentioned. Among these cases 504 tonsillar chancres were found, or an average of about five per cent.

Dr. Rhodes' inquiries among laryngologists lead him to think that these statistics may be misleading as many of those asked for records of cases had never seen a tonsillar chancre. He thinks it probable, however, that often these lesions are not recognized. The frequency of the innocent acquirement of syphilis is emphasized.

The situation and structure of the tonsils make their infection easy, as the negative pressure induced by swallowing or suction draws the virus into the crypts. A previous abrasion or diseased state of these is probable, though Bosworth's idea, that permanence of contact of the poison in the depths of the follicle favors inoculation, is plausible. Among modes of infection, kissing is the commonest. Bestial practices, Eustachian catheters, spatulæ, dentists' tools, pipes, drinking vessels, feeding or nursing children are commoner modes of conveyance of syphilis. Two varieties of initial lesion are mentioned. In one the affection is so slight that it may be overlooked until secondary symptoms appear. In the other the pathological process is marked with decided pain in swallowing or speaking, radiating to the ear.

The whole tonsil is swollen, congested and surrounded by a zone of hyperemia. It is not so much inflamed as hard and infiltrated, and the contiguous glands present as firm masses, are often of large size, and at times tender to pressure.

The ulcer on the tonsil is superficial, with a layer of necrotic, yellowish detritus on its floor. Malaise and fever may be present. The process may become phagedenic with mixed infection. The chancre usually disappears in from four to six weeks.

Dr. Rhodes presents the history of three cases. The first occurred in a man of thirty-four. It began with swelling of the right submaxillary lymph glands and soreness of the tonsil. The condition was diagnosed by the man's doctor as simple tonsillitis. In the course of three weeks the disease became progressively worse, the throat becoming very sore, with severe pain radiating to the ear, making opiates necessary. Lancing the tonsil was of no avail. The patient thought that at this time an ulcer was present in the throat. Three weeks after infection an eruption showed itself, but soon disappeared. When seen by Dr. Rhodes he had pronounced pain in the right side of the throat in swallowing and on pressure. The submaxillary gland was swollen, hard and tender. Examination showed the right tonsil a good deal enlarged, hard to the touch of the probe. Its entire surface was covered with dirty yellow secretion and no apparent loss of tissue. There was a similar yellow patch on the posterior pillar and edge of palate. Microscopic examination of a specimen showed simply inflammatory infiltration. Iodide of potassium and the local use of tincture of iodine resulted in rapid improvement, so that in ten days the ulcer was healed. In the tenth week he developed a macular and papular eruption. This improved under mercurials. The source of infection in this case was probably kissing a woman who had an eruption on her face, which she attributed to "poisoning in the woods."

The second case, a man of twenty-nine, when first seen had had a sore throat for five days. There was swelling of the left tonsil with marked pain, which grew worse, so that when he made his first visit the patient felt quite ill. The gland at the angle of the jaw was of the size of a walnut and tender. The left tonsil was swollen and felt hard to the probe. In its center there was a yellowish-gray patch about three millimeters in diameter. Local treatment was of no effect, and after five weeks a macular eruption appeared with a palmar syphilide. Under mercurials the chancre then began to disappear and rapid improvement occurred. No source of infection could be found.

The third case was that of a female singer, age thirty-two. She was seen in the clinic at Rush Medical College. Six weeks before she had noticed a swelling in the neck at the angle of the jaw on the right side, which grew rapidly and became hard and tender, the pain radiating to the ear. The swelling in the neck remained the sole symptom for four weeks. Then she began to have sore-throat and dysphagia, so that she could only take soft foods. The patient had been drinking from the same glass with a syphilitic bartender, and he had often kissed her and put his tongue into her mouth. Examination showed an adenopathy at the right angle of the jaw. The right tonsil was hardly larger than normal, but was deeply seated between the pillars. Pulling forward the anterior pillar with a blunt hook, a small ulcerated surface with gray base could be seen. This was invisible when the pillar returned to its normal place. The lower part of the tonsil felt indurated. A

macular syphilide, covering the chest, trunk and arms, appeared three days after her appearance in the clinic. She was placed on mercurial treatment and is still under observation. There was no genital lesion.

In addition to these cases of his own the author has collected a list of thirty-two hitherto unreported. Of these twenty-one were males and eleven females. In fifteen of these cases induration is not mentioned by the correspondents although it may have been present. A case reported by De Roaldes was much like the author's last case, as the tonsil was encapsulated by the pillars. In one case both tonsils, and in another these and even the lingual tonsil were involved. The ulceration found was generally slight or moderate, but some tonsils presented deep or large ulcers. Induration was a more prominent feature than ulceration, which in no case was destructive. One tonsil is described as enormously enlarged.

Adenopathy is not mentioned in the report of two cases. In all the other reports bubo was a characteristic feature. The sub-maxillary glands were most often enlarged, but the cervical, post-cervical and sublingual ones are also mentioned. The glandular enlargement varied from insignificant nodules up to large indurated pockets of the size of a turkey's egg. In some cases the enlargement is spoken of as enormous.

In six cases kissing was the cause of inoculation, in four bestial practices, in twelve cases the cause is unknown, in three introduction of the tongue into the mouth carried the disease. Mediate conveyance of the disease occurred six times by means of pipes, cigar-cutting machine, drinking vessels, and in one case by means of dentist's instruments and in another by a bistoury used to open a tonsillar abscess.

Dr. Rhodes' paper again calls attention to the frightful contagiousness of syphilis and to the frequency with which it is carried to innocent persons. It is surprising, in the many manipulations in dentists' offices, in the constant use of clinical thermometers, throat and nose instruments, etc., that syphilis is not conveyed oftener than it is. It is, of course, advisable to have a separate set of instruments for known syphilitics, but how often do we find that the examination of a new case has contaminated them before we are aware of the existence of lues. Suitable methods of rapid disinfection should be employed by every operator after the treatment of every case.

The patient with syphilis is to be warned that he is acting with criminal carelessness unless he separates himself from his fellows as much as possible while the disease is contagious, and is to have the separate use of cups, towels, napkins and other utensils enjoined on him.

Empyema of the Antrum of Highmore in Young Infants—

EMIL MAYER, M.D., New York City.

The apparent rarity of this affection, judging from the few cases on record, due, in all probability to the difficulties in the way of diagnosis, the remarkable unanimity of the symptoms in the cases diagnosed as such, the original methods employed for their cure and the all too brief mention or complete omission in most text-books, should make the study of empyema of the antrum of Highmore in young infants of increasing interest to the rhinologist.

Not more than a dozen cases are to be found in literature and the writer presents a case of his own which occurred in a child aged two and a half years, in whom the general symptoms noted were eversion of the right lower lid, fistulous opening in the cheek on the right side from which pus exuded and a most penetrating odor from the same side of the nose. Child had been well until six weeks before, having been seen when an attack of scarlet fever and pneumonia occurred; two weeks later a very severe nasal diphtheria was present; subsequently an abscess formed on the cheek which was incised and a fistulous opening remained. At the time of the examination a small probe entered the fistulous opening and revealed the presence of a large cavity in a downward direction and had the feel of necrotic bone; examination of the pus showed streptococci and staphylococci in abundance: no Klebs-Löffler nor tubercle bacilli were found. The diagnosis of an abscess of the antrum of Highmore with diphtheritic infection, was made. The child was operated upon and recovered.

Another case is presented by the writer, the main facts of which were communicated to him by Dr. W. B. Platt, of Baltimore. Six other cases were found in the literature, all of them due to infection.

An interesting discussion has been raised regarding these cases as to whether these are simply carious conditions, that is tubercular, or an osteomyelitis. Reports of bacteriological examinations have been made by various observers, notably Moritz Wolff, of Germany, and Richard Mills Pierce of this country.

The writer concludes that it is established beyond question of doubt that empyema of the antrum of Highmore in young children is not merely caries or tuberculosis or an osteomyelitis, but is as distinct an affection as in later life. That so few cases are noted in the living is in all probability due to the fact that the mortality is greatest when this complication occurs and also that in the very young the presence of localized pain is so difficult to establish as the little sufferer cannot indicate it.

In all the reported cases the symptoms were the same; namely, fistula under the eye usually discharging pus, ectropion, one sided purulent discharge from the nose with foul odor and eroded bone.

Careful observation, especially in nasal diphtheria when the bacilli are present, may enable us to discover these cases and by prompt attention, recovery result.

Regarding treatment, incision, curettement and through drainage will be followed by complete cure in the vast majority of cases.

General Anesthesia in Operations upon the Nose and Throat—

J. W. GLEITSMANN, M.D., New York.

In the use of the A. C. E. mixture and ethyl bromide for adenoid operations the author employed the A. C. E. mixture up to 1894, and gave it in the usual manner to the child lying on a couch, raising it carefully to the upright position, in which he performs all his adenoid operations. The only accident he had was a short lasting attack of suffocation caused by the tight band of a shirt, which had not been removed.

His attention having been drawn to the advantages of ethyl bromide by Moritz Schmidt in his text-book, 1894, he uses it now almost exclusively, and quotes the literature from 1884 to 1900. He prefers Merck & Co.'s preparation and administers a sufficient quantity with an impermeable mask, to produce complete narcosis, generally less than 30 grams being necessary. He always narco-tizes his patients, and in 500 operations had only two accidents—one of a secondary hemorrhage, controlled by the family physician and one of sepsis, which kept the child ill for four weeks.

He lays great stress on the assistance during the operation and in private practice almost always employs the same assistants, who therefore are perfectly familiar with his manner of operating. The latter is briefly as follows: The child is held in the upright position by one assistant, whilst the other gives the bromide. Having had a few recurrences of the adenoids when using the curette alone, he removes the growths now first with his post-nasal forceps, and then the remaining ridges with the curette. He instructs his assistants to lower the head of the child quickly to allow the outflow of blood after removal of the instruments, and if necessary repeats the same proceedings till the naso-pharynx is perfectly clear. He never saw any ill results from operating in the upright position, never had any blood enter the trachea and feels perfectly safe to recommend his procedure when the necessary precautions are observed.

The Effects of Cinchonism Upon Vocalization and Articulation—

CARL SEILER, M.D., Scranton, Pa.

The author found in the first place that the ordinary tinnitus aurium due to middle ear disease never transgressed the limits of pitch from D 1 (297 vibrations as the lowest point) to F 2 (704 vibrations) as the highest, as near as it was possible for him to determine, and that the subjective noises, although variable in quality or timbre, had no appreciable effect upon vocalization or articulation, but that they would invariably and very materially affect the perception of sounds which had the same or nearly the same number of vibrations per second as the subjective noises of the patient. The subjective noises due to quinine, salicylate of soda, alcohol, ether and many other drugs were invariably of a very high pitch, varying from as low as the G 3 (1584 vibrations) to as high as B 4 (3960 vibrations), and often even higher. He also

observed that any composite noises of high pitch not only interfered with the pronunciation of those consonants which, according to the investigations of Helmholtz and others have for their characteristic sound a combination of high-pitched sounds, such as "th," "S," "Sh," "Z" and the like consonant sounds of articulate speech, but also caused them to be easily obliterated and consequently most difficult to appreciate and be recognized by the ear. The high pitched subjective noises in the ear produced by drugs and which are not due to mechanically produced sound waves of the air, also materially interfered with the pronunciation of the high-pitched consonants to an interference which would indicate that subjective or mental sensations are to some extent material, otherwise they could not interfere with a purely mechanical process such as articulation.

Retrograde Metamorphosis in the Faucial Tonsils—J. L. GOODALE, M.D., Boston, Mass.

The results of this investigation show that retrograde metamorphosis in the faucial tonsils begins in the regions where the connective tissue originally predominated, namely, in the trabeculæ and fibers of the capsule. It may progress either along the trabeculæ, in the form of an irregularly distributed sclerotic process, or in a more homogeneous and symmetrical manner, proceeding from the base of the organ towards the mucous membrane of its free periphery. In the sclerosed areas, the endothelial cells of the reticulum exhibit less evidence of proliferation, and become fewer in numbers. Later those forming the germ center of the follicle entirely disappear, and there is left to represent the follicle merely a heap of lymphoid cells, which progressively decrease in number, until finally the former site of the follicle is occupied wholly by connective tissue, in which fat may be deposited. The follicles most remote from the crypts experience the greatest amount of atrophy, while those nearest the crypts, and those particularly nearest the orifice of the latter, preserve correspondingly best their functional activity.

A Case of Stenosis of the Larynx Following Fracture; Operation; Recovery. ARTHUR W. WATSON, M.D., Philadelphia.

This paper appears in full in this issue of THE LARYNGOSCOPE. Page 55.

Four Cases of Tumors—J. E. NEWCOMB, M.D., New York.

Dr. J. E. Newcomb related the clinical histories of four interesting cases of tumors coming under his recent observation and exhibited drawings of the various growths.

Case I was an osteo-sarcoma of the inferior turbinate, occurring in a colored man of forty-one years who had complained only of

nasal obstruction. There was apparently a bony adhesion between the nasal septum and the right inferior turbinate. A core of bone was removed by the trephine. Examination revealed a sub-epithelial layer of spindle-celled fibrous tissue with characteristic sarcomatous arrangement of the cells. In places a double row of osteoblasts were visible, though they had not yet extruded, lime salts thus appearing amorphous rather than truly bony. In view of the nature of the growth, the patient was urged to undergo radical operation, but refused.

Case II was a true papilloma of the nasal septum. Dr. Newcomb alluded to the paper of Dr. Arrowsmith, of Brooklyn, appearing in *THE LARYNGOSCOPE*, November, 1897, and stated that he had been able to find records of nine additional cases reported since the date of Arrowsmith's paper.

Case III was sarcoma of branchial cleft occurring in a man of sixty-five years. Two years ago a swelling appeared on the right side of the palate and gradually encroached upon the oral cavity. It was tense and elastic in feel and, on tapping, yielded a bloody serous fluid. It was dissected away from its attachments from the outside, there being no wound made in the mouth. The operation was performed by Dr. R. F. Weir, to whose service in the Roosevelt Hospital the patient was admitted. The patient made a good recovery.

Case IV was a rare one of angio-fibroma of the nose, probably arising from the left middle turbinate. The patient was a young man of twenty years who for seven months had complained of nasal obstruction. From the front the tumor looked like an ordinary polyp, but in the post-nasal space it was visible as an irregular projection. Attempts at removal of a piece were followed by profuse hemorrhage. The growth was so hard that the wire loop of the snare broke several times before a fragment was finally secured. The patient refused to have anything further done.

In conclusion Dr. Newcomb expressed his thanks to Dr. Jonathan Wright, who had kindly examined the specimens from the cases presented, except that of the bronchial cyst examined in the laboratory of the medical department of Columbia University.

Tonsillotomy Rash. WYATT WINGRAVE, M.D., London.

This paper appears in full in this issue of *THE LARYNGOSCOPE*.
Page 51.

Serous Disease of the Maxillary Antrum, With Report of Two Cases. W. E. CASSELBERRY, M.D., Chicago.

This paper appears in full in this issue of *THE LARYNGOSCOPE*.
Page 43.

(To be continued.)

LARYNGOLOGICAL SOCIETY OF LONDON.

SIXTY-SIXTH ORDINARY MEETING, MAY 3, 1901.

E. CRESSWELL BABER, M.B., President, in the Chair.

Case of Large Laryngeal Growth Shown at a Previous Meeting.

SOWN by DR. BARCLAY BARON. It was generally agreed that the growth was attached by some sort of pedicle, and that its removal through the mouth would be easy. At the operation it was found quite impossible to remove it in this way, as the growth was a widely infiltrating epithelioma with no pedicle at all, the epiglottis and other structures of the larynx being implicated.

The patient is still living, the glandular infection being very considerable.

A Man æt. Sixty-one, from whose Left Vocal Cord a Large Epithelioma was Removed by Endo-Laryngeal Operation in 1886 and again in 1887, since which there has been no Recurrence.

Shown by MR. MARK HOVELL. P. R., æt. forty-six, a stocker, came to the Throat Hospital, Golden Square, on March 17, 1886. suffering from severe dyspnea, caused by a large growth of a whitish color, which almost filled the larynx. He looked pale and anxious, and perspired freely on the least exertion. On March 20th, after a solution of cocaine had been sprayed into the larynx, nearly the whole of the growth was removed through the mouth with cutting forceps. After its removal was found to have been attached to the inner border and under surface of the left vocal cord for almost its whole length. When the patient left the hospital, on April 5th, not a trace of the growth remained.

After the operation the patient gave the following history:

In the summer of 1884, whilst making up the fire, he suddenly experienced, for the first time, difficulty in breathing. The subsequent attacks of dyspnea, which as time went on became more severe, used to come on suddenly and last for a few minutes. They came at irregular intervals, sometimes two or more in a day, and at other times only one or two during the week. He went to the Westminster Hospital at the beginning of 1885, and there saw Dr. de Havilland Hall, who wished him to become an in-patient; but he did not consent to this proposal until April, by which time the difficulty in

breathing had considerably increased. He remained in the hospital three months, during which time some pieces of growth were removed by Dr. Hall. He was taken by Dr. de Havilland Hall to see Dr. Felix Semon at St. Thomas' Hospital, who attempted to remove the remaining portion of the growth. He left the hospital, but was subsequently taken by Dr. Hall to see Dr. Semon again, who then recommended the removal of the portion of the larynx to which the growth was attached. To this treatment the patient refused to submit.

He returned home and resumed work, and remained at it for three weeks or a month. The difficulty of breathing then became so great that he was obliged to seek further advice, and he went to St. George's Hospital, with the hope that relief could be obtained there without operation being performed. He saw Dr. Whipham, and was made an in-patient. When he had been in the hospital about a week, he learnt that it was proposed to perform tracheotomy before an attempt was made to remove the growth through the mouth. He declined to have tracheotomy performed, and left the hospital. He then again returned to work, and remained at it until the end of 1885, when his breath was too short to enable him to continue at it any longer.

On March 17, 1886, he came to the Throat Hospital as before mentioned.

After leaving the Throat Hospital the patient was not seen again until May 2, 1887, on which date he returned, and was found to be in a condition similar to that which existed when admitted the previous year. On examining his larynx a growth was visible almost identical in appearance, as regards size, color and microscopic texture, to that previously removed. Subsequent to the second operation he told me that on leaving the hospital on April 5, 1886, he resumed work, and felt no discomfort until about January, 1887, when his breathing became a little short. The dyspnea steadily increased, and about the middle of April he was obliged to discontinue work.

As the patient still refused to allow any extra-laryngeal operation, it was decided to again remove the growth with forceps. A solution of cocaine having been sprayed into the larynx, the growth was removed as before with cutting forceps. It was tougher than that of the previous year, and had a much larger base, being attached not only to the under surface and inner edge of the left vocal cord, but also to its upper surface and to the left ventricular band. At the first operation, on May 9th, although the hemorrhage was greater than it had been on the former occasions, sufficient growth was

removed to enable the patient to breathe with comfort. Another piece was removed on May 17th, and the patient left the hospital on May 20th. The last piece was removed on June 15th, after which no trace of the growth was visible, and the surfaces from which it had been removed soon healed. The long intervals between the operations were made to suit Mr. Hovell's convenience, and were not caused by any unfavorable symptoms having occurred. On June 30th slight congestion of the larynx still remained; the left vocal cord moved but little, but the movement of the right cord was normal. His voice was strong and distinct, but slightly husky in consequence of the congestion.

The patient was examined on August 13, 1887, and there was no trace of the growth. The movement of the left vocal cord was impaired, but with the exception of slight general congestion of the larynx, and slight thickening of the interarytenoid fold, the result of chronic laryngitis, no abnormal condition was visible. The patient's voice was clear and strong, and there was no dyspnea. The patient had been employed at the gas works for twenty-one years, and the dusty work during this period would account for the chronic laryngitis.

The following microscopical report of the growth removed in 1886 was kindly made by my colleague, Mr. Frederic Eve:

"The growth removed in 1886 was an epithelioma with a markedly papillary surface. The papillæ were very long and filiform. The base of the growth, under the microscope, showed prolongations downwards of the surface epithelium. These were cylindrical, and terminated in a well-defined rounded or subdivided end. In some parts the growth of epithelium was more confused, and composed of tortuous columns or cylinders, which here contained numerous cell-nests; but these also existed in smaller numbers in other parts of the growth. The submucous tissue was nowhere present in the parts removed, but the epithelial columns forming the growth were so well defined that I do not suppose there was any diffuse infiltration of the mucosa with young epithelial cells.

"The growth removed in 1887 differed from that of the previous year in that it contained very few cell-nests, and these of small size. The epithelial columns were more confused, and their margins less well defined. Some shreds of mucosa were attached to its base. These were composed of small spindle-cells and fibrous tissue, containing elongated nuclei, and many small round or 'indifferent' cells. Looking at the matter solely from a histological point of view, I have no hesitation in expressing my opinion that the growth was an

epithelioma. This is based on the extensive and characteristic ingrowth of epithelium, the presence of cell-nests, and the general appearances of the neoplasm.

"*P.S.*—I have formed an impression that epitheliomata are less highly malignant if distinctly warty or papillary on the surface; whilst, when the opposite condition exists and the surface is flat or ulcerated, the infiltration below is wider and more diffused, and the growth more malignant. As examples of comparatively lowly malignant warty epitheliomata, I may mention chimney-sweep's cancer of the scrotum, and the epithelioma following ichthyosis of the tongue. This may account in some measure for the successful issue of your case."

Mr. Hovell, in conclusion, said that, although the attempt to remove an epithelioma from the larynx by means of forceps was not a procedure which in an ordinary case would be entertained, or, if undertaken, would in the large majority of cases have any chance of success, yet exceptional cases must be dealt with in an unusual manner.

MR. DE SANTI said that he was extremely interested in the history, the line of treatment and the result of this case. What one had to consider in the matter was, firstly, the microscopic appearances of the sections submitted to the meeting; and secondly, the clinical features presented by the history given. Mr. de Santi had very carefully examined the microscopic sections, and must state that he could not find in their appearance anything whatever pointing to epithelioma. The drawing shown was a very artistic one of a perfect epithelial cell-nest, but in no part of the sections could he find anything even like an imperfect cell-nest. Moreover, cell-nests might occur in growths that were not epitheliomatous. He felt certain that as regards the microscopic appearances the diagnosis of epithelioma must be considered non-proven. Again, looking to the clinical aspect of the case, the time over which it had extended, together with the great size of the growth, as shown by the drawing, was quite unlike any epithelioma he had ever seen or heard of. If the growth had been malignant and had existed as long as stated, there must have been extensive infiltration at its base, and no endolaryngeal operation could possibly have eradicated the disease as the disease had been eradicated in this instance. Neither, therefore, did the clinical features or the microscopic appearances warrant the diagnosis of epithelioma, and in Mr. de Santi's opinion this conclusion was more than supported by the result obtained by the removal of the growth by endo-laryngeal forceps. In his opinion the growth had been of an innocent nature throughout.

SIR FELIX SEMON declared his entire agreement with the remarks of Mr. de Santi. It would not be expected of him, after the lapse of fifteen years, that he should recollect the case, and indeed he frankly confessed that he had no recollection whatever of it. What he was

going to say would be based only on the drawing which Mr. Hovell had shown to the Society, on the microscopical appearances, on the clinical features of the case, and finally on the present appearance of the patient's larynx. From all these points of view he could not help confessing that the case was a mystery to him. To begin with, he could not reconcile the idea of malignancy with the clinical appearance as now presented. We were taught—and his own experience corroborated it—that the difference between a benign growth and a malignant growth was that a non-malignant growth sprouted from the *surface*, while the malignant infiltrated the *tissues*. How then could an infiltrating growth be removed so thoroughly that no recurrence had taken place, whilst the larynx, as at present seen, showed not the least trace of any operation having ever been performed? He did not wish to be misunderstood, and he wished to say distinctly that he did not deny the *possibility* of removing a malignant growth from the larynx by endo-laryngeal operation. Quite a number of cases of that sort were now on record. Perhaps some of the older members of the Society might remember a letter which he had written to the *British Medical Journal*, on June 4th, 1887, in reference to the case of the then German Crown Prince, for the purpose of warning laryngologists against subordinating clinical apprehensions to the report of the microscopical examination. But in that letter he himself had described a case on which involuntarily he had performed a radical intra-laryngeal operation. It was the case of an old gentleman, aged seventy-five, who had a suspicious-looking wart on one vocal cord. He had only wished to remove a piece for microscopical examination. However, as every laryngologist of experience knew, intra-laryngeal operations were after all more or less of a fortuitous character, and by an exceptional piece of luck he found he had removed the *whole* growth. Mr. Shattock made transverse sections through the whole growth and its base, and it in part bore the characters of a typical cornifying epithelioma. The patient in question was now alive, although more than ninety years of age, and about six weeks ago he actually preached at a wedding! It was well known to the Society that his friend, Professor Fränkel, of Berlin, had made himself the champion of the intra-laryngeal method of removing a malignant growth in suitable cases, and there were now, as he had said before, a number of well-authenticated cases on record in which the proceeding had been successful. But he could not understand, in spite of this, how after removing an infiltrating growth from the larynx, particularly of the size of the one shown in Mr. Hovell's drawing, it came about that one could not detect the slightest evidence of its former presence and of its removal. Now there was no sign whatever in the larynx of Mr. Hovell's patient to show that a large epithelioma had been removed. If he were asked at the present moment in a court of law to state on oath from which vocal cord the growth had been removed, he would have to confess his inability to tell, and he would have to say it looked as if nothing had been removed. So clinically he must confess the case beat him altogether. Further, he had seen

a good many cases in which there was for some time a considerable arrest in the progress of a malignant growth, but for this to happen for *several years*, during which there was practically no progress observed in the size of the growth, surely was most unusual. He was not one who did not believe in things for the mere reason that he himself had not seen them; but he found it difficult to understand an arrest of this kind. Again, from a careful examination of Mr. Hovell's own drawing of the growth, it looked to him much more like a large papilloma springing from the anterior commissure of the vocal cords than like a growth, benign or otherwise, springing from one of the vocal cords. If this surmise of his should be correct, then they would have a perfectly natural explanation of the present appearance of the case. He had once himself removed a very large papilloma looking exactly like the growth shown in Mr. Hovell's drawing from the anterior commissure of the vocal cords of a lady aged forty-eight. The specimen was at present in the museum of St. Thomas's Hospital. With regard to the microscopical appearance, he had looked very carefully, but could not see anything in the specimen typical of epithelioma. He willingly admitted that it was an old specimen, and therefore it might not be so characteristic as it originally had been. He had asked Mr. Hovell if he would consent to more pieces being examined by the Morbid Growths Committee. He hoped it would be the general opinion of the Society that such an unusual case should be submitted to this examination. In conclusion, he wished to say that nothing had pleased him more than Mr. Hovell's final observations to the effect that this was an unusual case, and therefore had to be dealt with in an unusual manner. If the man absolutely refused to have the growth removed in the way which was in accord with the progress of modern scientific surgery, *i. e.* by external operation, then under such circumstances an intra-laryngeal operation was permissible; but he strongly hoped that a case of this sort would not be made the starting-point for further intra-laryngeal operations in cases of suspected or proved malignancy. These remarks were analogous to those he had made at the last meeting in the discussion of the value of injections of iodine or iron in cases of goitre. At a time when one had not a better, such methods were both valuable and permissible, but the operator should keep pace with the progress of surgery; and so he was particularly delighted to hear Mr. Hovell say that under normal circumstances he would recommend the extra-laryngeal operation. With this sentiment he entirely agreed.

The PRESIDENT, in commenting on this interesting case, thought Sir Felix Semon's proposal of re-examination of the tumor by the Morbid Growths Committee was a valuable one, and ascertained from the meeting that it would be its wish to adopt it. He said the larynx at the present moment showed so little change that it was difficult to imagine that any malignant growth had been removed.

Mr. VINRACE wished to ask Mr. Hovell whether from first to last he had observed any lymphatic enlargement in connection with this growth?

MR. MARK HOVELL, in reply, said he had not troubled the Society with the full notes of the case, and therefore had not mentioned the attachments of the growth at the time of the first and second operations. At the first operation the growth was attached to the inner border and under surface of the left vocal cord along its whole length. At the second operation the growth was much tougher, and it had a much larger base, being attached to the whole length of the under and upper surface, and inner edge of the left vocal cord, and to the left ventricular band. As regards the portions of the growth which he exhibited, he should be very happy for the Morbid Growths Committee to have a portion of each for further examination. He reminded the meeting that Mr. Eve, who had made his own sections, had definitely stated that the growth was an epithelioma. With regard to the mobility of the left vocal cord, the movement was impaired after the first operation, and had remained so since. In reply to Mr. Vinrace, he did not recollect any lymphatics being enlarged.

Female, æt. Fifteen, with Absorption of the Cartilaginous Septum due to Pressure from Nasal Polypi.

Shown by DR. FREDERICK SPICER. The patient came under observation some months ago with both nostrils completely obstructed with polypi, on the removal of which the cartilaginous septum was found to have been absorbed, and the nose disfigured, but there was no perforation.

The case was shown in order to obtain the opinion of others as to its causation; but Mr. Spicer ventured to describe it as above, firstly, because he believed the usually recognized sources from which this trouble arises have been eliminated; secondly, on account of the history, and, thirdly, because of the totally blocked condition of the nose when first seen.

There was no family history of syphilis, scrofula or injury.

The first indication of anything wrong was the appearance four years ago of what she called "a pimple" upon the bridge of the nose, from which matter came; this was accompanied by a discharge of pus from the nostrils, and was of sufficient import to require the assistance of a doctor. It only lasted a few days.

THE PRESIDENT understood that this case had been brought forward with a view to eliciting an opinion as to whether the absorption was really due to pressure from the nasal polypi. It was evidently a case of nasal polypus with disease of the ethmoidal, and possibly of other, sinuses. He should hardly say that absorption of the cartilaginous septum was due to pressure, but more likely to some abscess in the septum, and he would like to ask Dr. Spicer whether he had observed at any time in this case an abscess in this position.

DR. FITZGERALD POWELL had seen a case under treatment very similar to Dr. Spicer's, in which there had been an abscess of the

septum, which pointed, and was opened at the anterior margin of the septum. The cartilage had entirely fallen away from the nasal bone. There was considerable thickening or broadening of the latter, the result of ethmoiditis. The exciting cause was said to be traumatism. The case was improving, and, if possible and agreeable, he would show the patient at a future meeting as an interesting comparison with the present case.

MR. NOURSE thought that an interesting point in this case was the actual cause of the falling in of the nose; was it due to the absorption of the septal cartilage or to some further injury? He recollected a case he saw at the hospital a short time ago, where the only remaining vestige of the division between the two nostrils was the little columella; the septum, bony and cartilaginous, having entirely disappeared, and yet the nose was perfectly straight and without deformity externally. It struck him in this case that possibly, although there had been disappearance of the triangular cartilage, the falling in was due to the absorption of the lateral cartilages, with consequent breaking of the cartilaginous arch.

DR. SCANES SPICER thought that this was a case of old septal abscess in which the upper lateral cartilages had been destroyed by the suppuration, and that the deformity was characteristic of that condition. In his experience, traumatism and syphilis were the commonest forerunners of these septal abscesses.

DR. STCLAIR THOMSON thought that Mr. Nourse's explanation might read entirely the other way. He agreed with the President that the broadening was due to starting ethmoiditis, and that the most likely explanation was that the patient had had an abscess of the septum. He had made reference on a previous occasion to a case in which an abscess in the septum—not traumatic—occurred in the course of suppurative disease of the antrum. Of course they all knew of cases like that mentioned by Mr. Nourse, where the whole cartilage might be absent, and yet there was no falling in. But if the cartilage was absent through an abscess, the consequent contraction of the cicatricial tissue explained the dragging down of the bridge and the deformity of the nose. In this patient, if the nose was grasped from side to side and compared with one's own nose, it became very evident that there was a large defect of the quadrilateral cartilage of the nose.

THE PRESIDENT thought Dr. Thomson's explanation the correct one, *i. e.*, the occurrence of contraction of the cicatrix after absorption of the cartilage.

Case of Unusual Laryngo-Pharyngeal Tumor in a Woman, with Microscopic Specimen of Growth Removed.

Shown by DR. LAMBERT LACK. This patient was shown at the last meeting of the society. The advice given on that occasion had been very carefully considered, but, after some hesitation, the exhibitor had preferred to perform an external operation, so as to thoroughly examine the growth and its attachments, and to see

exactly what steps were necessary to completely extirpate it. An incision some four inches long was accordingly made in the anterior triangle of the neck, the sterno-mastoid muscle and the large vessels drawn outwards, and the lateral pharyngeal wall exposed. A linear incision was then made into the pharynx, and the larynx hooked forward so as to thoroughly expose its posterior wall. The growth was soft and nodular, about the size of a pigeon's egg, and attached by a broad base to the mucous membrane over the cricoid cartilage. The mucous membrane was divided all round the growth, and it was then dissected off the larynx. The wound in the mucous membrane of the larynx was closed with a few catgut sutures. The wound in the pharynx was then closed by a row of closely placed fine sutures uniting the edges of the mucous membrane, and the pharyngeal aponeurosis was also carefully stitched up. A large drainage-tube was inserted into the wound in the neck, and the skin wound closed by silk-worm gut sutures. Just before opening the pharynx, a laryngotomy was performed as a precautionary measure, but it was really not needed, and the tube was removed next day. The after history was uneventful.

DR. JOBSON HORNE has made sections of the growth, which he reports to be a mixed-cell sarcoma.

SIR FELIX SEMON suggested that this specimen should be submitted to the Morbid Growths Committee. He did not pretend to be a great histologist, but to him the section of the tumor looked more like a fibroma than a sarcoma, and he would like to have the opinion of the Morbid Growths Committee. Under all circumstances, Dr. Lack must be congratulated on his most successful operation.

DR. STCLAIR THOMSON asked if Dr. Lack intended publishing the case in full in the "Proceedings:" if not he would like to have a few particulars as to whether it was necessary to put temporary ligatures round any of the arteries: as to whether he had experienced any difficulty with bleeding or breathing, and as to what steps were necessary in turning round the larynx.

DR. LAMBERT LACK said there was no difficulty with bleeding, as the large wound exposed the whole field of operation to view. Consequently there was no necessity to put temporary ligatures round any of the large vessels. Such a proceeding was only necessary when operating in the pharynx through the mouth, where it would be impossible to pick up any large vessel which might be cut.

Specimen of Bony Occlusion of One Nostril.

Shown by DR. LAMBERT LACK. The specimen was obtained whilst dissecting, and no history was obtainable.

Specimen of Multiple Papilloma of Larynx.

Shown by MR. H. W. CARSON. The specimen was removed post mortem from a female child æt. two and one-half years, who

had died suddenly of asphyxia. There was a history of orthopnea and dysphonia from birth. The specimen showed well-marked papillomatous growths in the region of the vocal cords, and a sub-glottic extension on the anterior wall.

Case of Pachydermia Laryngis.

Shown by MR. CHARLES A. PARKER. This patient had been shown to the Society about two years ago, when it was thought by some to be of a tuberculous nature. Since then no evidences of tubercle had been discovered. The local condition was practically unchanged, in spite of various methods of treatment.

The PRESIDENT said he understood that the condition had existed for three or four years without much improvement.

DR. JOBSON HORNE considered the condition was typical of pachydermia laryngis verrucosa, and agreed with Mr. Parker that tuberculosis was not a factor in its causation. Dr. Horne was not in favor of any local treatment of a surgical nature.

MR. DE SANTI was of opinion that in this case the line of treatment now should be to leave the man quite alone.

MR. PARKER, in reply, said he showed the case chiefly because on the former occasion it was thought by some members to be tubercular. and he was then asked to bring it forward again. He did not think there had ever been any evidence of tubercular disease. For the last nine months no treatment had been attempted.

A Case of Tumor of the Base of the Tongue in a Young Female.

Shown by DR. DUNDAS GRANT. This case was shown with the object of gaining from the members of the Society opinions as regards both diagnosis and treatment.

MR. DE SANTI considered this case to be one of extensive sarcoma of the base of the tongue. The feel of the tumor, its irregular surface, the absence of ulceration, the age of the patient, and the history, all pointed strongly to its malignant nature. Moreover, a large piece of the growth had been removed a year ago (unfortunately he understood this piece had been lost, and therefore not submitted to microscopic examination), and had been followed by a rapid and considerable extension of the tumor. The patient he noticed had enlargement of the submaxillary glands, and this was far from uncommon in sarcomata of this neighborhood. A piece of the growth should be removed and submitted to a skilled pathologist for microscopic examination, and the case dealt with surgically.

DR. LAMBERT LACK had under his care at the present time. a young girl æt. nineteen, presenting some features very much like this case. The tumor was a smooth one with large vessels coursing over it, and he was under the impression that the growth was a thyroid tumor. He would not, however, like to give that diagnosis in the present case, unless some of the ulceration seen was due to the removal of pieces by Dr. Grant.

A Case of Ulceration of the Tip of the Tongue in a Man æt, Fifty-Two. For Diagnosis.

Shown by MR. ATTWOOD THORNE. The patient had complained of some pain for the last year. Mr. Thorne only saw the patient ten days ago, and he then at once put him on iodide of potassium, grs. 10 three times a day. There was, if anything, a slight improvement. He asked whether it was epithelioma, syphilis, or tubercle? The tongue was slightly fixed.

The PRESIDENT advised that the iodide of potassium be pushed.

MR. MARK HOVELL suggested that a piece should be removed and submitted to the microscope.

DR. STCLAIR THOMSON said syphilitic disease was certain, and malignant possible. In all cases where there was any doubt it was the rule to treat the case on anti-syphilitic lines. He had once had a patient who was condemned to have his tongue removed by a leading authority on syphilis. That patient was afterwards shown as having been cured of cancer by Mattei's remedies. Mr. Thorne would be well advised to take no further measures until inunctions of mercury had been given a good month's trial.

MR. DE SANTI considered this case to be epitheliomatous rather than syphilitic. There was marked induration at the base of the ulcer; the ulcer itself was raised and warty, not depressed and punched out, and it rubbed distinctly over the lower incisor teeth. There was a little limitation of movement, and some slight fulness in the sub-maxillary region. It was an uncommon situation for a gumma, but no so uncommon for epithelioma.

DR. LAMBERT LACK said that Dr. Thomson had exactly stated his views when he said it was certainly syphilis and quite likely epithelioma, but he disagreed entirely with his suggestions as to the course to be pursued. Dr. Lack thought it was very wrong to put a case of suspected epithelioma in such an accessible region on a course of iodide of potassium, and more especially to give him a month's course of treatment by mercurial inunction when the diagnosis could be immediately made by removing a small piece of growth for microscopical examination. Should the case be malignant, the danger of such a long delay was obvious.

MR. VINRACE wished to ask whether Mr. Thorne had noticed any fixation in the tongue. He asked if there were any infiltrations, other than those of a malignant nature, which impaired the movements of the tongue.

MR. THORNE, in reply, said that he would remove a small portion for examination, and would order mercurial inunctions, and hoped to report on the case at a future meeting.

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ORIGINAL COMMUNICATIONS.

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THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 42.)

THE HIPPOCRATIC TREATISES.

So completely have the records of Greek medicine before the time of Hippocrates perished, that he seems himself to have created it. It seems to have sprung from him and his associates, like Athene from the head of Zeus, or like the sudden growth of the infant Apollo after tasting of the ambrosial cup from the hand of Themis to have started at once into the full life of a vigorous and fruitful manhood. We may be sure, however, from the cold analysis of historical experience and of philosophical logic that there must have been a long previous condition of growth and development, which can not be traced in the scanty remnants of history left us.

On the authority of Celsus (Lib. I. Proemium) we must accept Hippocrates as really the first medical specialist in our civilization, for he was the first to separate medicine from other sciences and devote himself exclusively to that branch of knowledge, for which, no doubt, as we may judge from reading Plato, he was regarded by other philosophers as lamentably narrow and one-sided. Reasoning from experiences of later ages, we may imagine that after a little time some philosophers, who thirsted after the reputation of progressiveness, acknowledged that this specialization might possibly be excusable, provided the heretic had first spent all the productive years of his youth in the pursuit of inquiry into the nature of the gods and the occult properties of the four cardinal elements, fire, earth, air

Hippocrates as
a Specialist.

and water. I can not forbear giving here, Celsus' explanation of how it happened that philosophers took up the study of medicine at all, since it is somewhat amusing. He intimates that the old philosophers spent so much of their time in sedentary contemplation and nocturnal vigils that they fell sick, and were forced to resort to the study of medicine to cure themselves.*

The civilization of the Chaldean and the Parsee, of the Egyptian and even of the Hindu is strange and incomprehensible to us, but we instinctively feel that the Isles of Greece, that Cos, over opposite Abdera is a familiar land, and that there we will find a mental activity into which we are able to enter. When we read in Xenophon's *Anabasis* (III 119) that the soldiers cried out when their comrade sneezed "*Ζεῦ σῶσον*" "God save you," immediately comes to our mind the Frenchman's ejaculation "*Dieu vous benisse*" and the Germans' hail "*Gesundheit*."† Turn to Hippocrates' account of the case "In Thasus, the wife of Dealces who was lodged on the plain"‡ and read there his account of a death from fever with cerebral symptoms. No such vivid impression is left on the mind by any other portrayal of the fatal march of a mortal disorder until we find Shakespeare describing in Dame Quickly's patois the death of Falstaff who was "so shak'd of a burning quotidian tertian that it is most lamentable to behold" and how "at the turning o' the tide" she saw him "fumble with the sheets and play with flowers and smile on his fingers end" and noted that "his nose was sharp as a pen," how "a' babbled of green fields" and cried out, "God, God, God, three or four times" and "his feet were as cold as any stone." The wife of Dealces fumbled with the bed clothes and picked at the hairs on them and laughed and there was much talk and again she was silent. Adams (l. c. p. 196) supposed Shakespeare to have derived his description second hand from the celebrated passage in

* "Ergo etiam post eos, de quibus retuli, nulli clari viri medicinam exercuerunt; donec majore studio literarum disciplina agitari coepit, quae, ut animo praecipue omnium necessaria, sic corpori inimica est. Primoque medendi scientiae sapientiae pars habebatur, ut et morborum curatio, et rerum naturae contemplatio sub iisdem auctoribus nata sit: scilicet iis hanc maxime requirantibus, qui corporum suorum robora quieta cogitatione, nocturnaque vigilia minuerant. Ideoque multos ex sapientiae professoribus peritos ejus fuisse accepimus; clarissimos vero ex iis Pythagoram, et Empedoclem, et Democritum. Hujus autem ut quidam crediderunt, discipulus Hippocrates Cos, primus quidem ex omnibus memoria dignus, ab studio sapientiae disciplinam hanc separavit, vir et arte et facundia insignis." It is needless to say that those acquainted with the writings of Celsus will recognize in this passage his bias towards the vital importance of bodily exercise in therapeutics.

† This ancient custom, however, is older than the Greek civilization.

‡ *Epidemics III Sec. 17, case XV.* Adams Syd. Edition *Genuine Works of Hippocrates* All reference to the Hippocratic treatises are to the Littré edition unless otherwise, as here noted.

Hippocrates* as to the fancies of death, but it seems to me that it bears a much closer resemblance to the description I have alluded to. I do not believe Shakespeare ever had any knowledge of either of these passages in the Hippocratic writings, either first hand or second hand. We are struck by the resemblance of the impressions made on our minds by the words of two masters in the description of similar objective phenomena. It is the stroke of the master artist, the touch of immortal genius which sprang as frequently from the soil of Greece in its Golden Age as it did from that of Britain at the zenith of her literary glory. Such objectivity is not to be found in the Orientals' dream of life. Do we find here an explanation, or part of an explanation, of why the civilization of the Orient, of the Ganges and of the Nile has stood still for 3000 years and can not now be aroused from the slumber of so many centuries? At least we can comprehend somewhat from this objectivity how the virile fructifying aggressive mind of the Ancient Greek furnished a soil for the quick luxuriant growth of seeds from a dying civilization, dying even then with its youth stretching back into the inscrutable past of prehistoric times.

It must be borne in mind that Hippocrates lived in that glorious time of Greek civilization and culture, the golden age of Pericles, that his life overlapped that of Phidias and Praxiteles, of Anaxagoras, Socrates and Democritus, of Æschylus, Euripides, Sophocles and Aristophanes, of Herodotus, Thucydides and Xenophon, of Plato, Aristotle and Demosthenes. Never since, in the history of the world, have there existed in the span of one man's life so many men whose fame still shines in mortal records and whose words still influence the thoughts of men. Such a throng was not to be gathered from all the broad empire of Augustus, nor to be found in the brilliant court of the Grand Monarque, nor among those who flourished in the days of England's Virgin Queen. None can say that the great name of Hippocrates stands less illustrious on the role of medical science than does that of Socrates in philosophy, of Phidias in sculpture, of Demosthenes in oratory, of Thucydides in history, or of Aristotle in science. It is the evidence of the knowledge of the upper air passages and their diseases possessed by this great primeval figure in medicine with which we are now concerned. Among the large number of writings ascribed to Hippocrates, there are only a few which have been acknowledged by all authorities to have been really written by him. Some have been proven, many have been surmised, to have been written by his pre-

The Era of
Hippocrates.

* Prognostics 2, Adams.

deceßors and successors. It seems probable that some were written by others during his life time who had the benefit of his guidance and of his instruction. However this may be it is not my aim to enter into a general discussion of such matters but rather to bring into prominence those gleams of light thrown upon our subject which have come to us across twenty-five centuries. A reference to the editions of Adams and of Littré and to the works of Galen, will enlighten the reader as to the books which are accredited to Hippocrates himself and as to those which are supposed to have been written by others of his time or school: Some of the passages in the writings of these *Æsclepiadæ* seem ridiculous to us, but we should keep constantly in mind the charity which our successors in their histories will have to extend to the productions of our own times. Indeed, in looking over the various commentaries on Hippocrates from Galen's time to our own, it is curious and not a little amusing to observe how careful each critic is to point out the errors Hippocrates committed in not being in accord with the doctrines of the critic's own time, which are now as obsolete as those of Hippocrates. So little does Hippocrates have to say of the cure of diseases that *Asclepiades*, an early type of the genus charlatan, subsequently ridiculed his system by saying it was the contemplation of death. It is perfectly evident that he recognized the futility of drugs as curative agents, and all his works, especially those which are supposed to be genuine, testify to the persistence with which he studied the symptomatology rather than the pharmacology of disease.

Innumerable facts have been discovered since these early times, and the wonder chiefly is that they should have then been able to reason as acutely as they did from the little actual knowledge they had of normal anatomy or of pathological processes. We have seen from the few extracts I have been able to gather how primitive knowledge of the anatomy and physiology of the upper air passages was. In the Hippocratic treatises themselves we find it little more advanced.

In fact, until the writings of Galen, the knowledge of anatomy seems to have been almost nil from a modern standpoint.

"Drink through the pharynx and œsophagus. Larynx to the lungs and trachea. From these to the top of the bladder." This is the literal translation of the Greek text as given in Kühn's edition, but Kühn himself translates it "*Potus per fauces et gulam, arteriæ summum, quod larynx dicitur, in pulmonem et arteriam ex quibus in summan vesicam.*" This latter passage occurs in the book on the

"Nature of the Bones" (I) which is apparently a collection of notes. In the fragment of the book on "Anatomy" we find it stated that the bronchi terminate at the top of the lungs, being composed of curved rings. Then follows a description of the lungs and of other organs detailed in such a manner that no room is left for the supposition that the writer had any idea that fluids passed through the lungs to the bladder. Again, elsewhere,* we find, "If any one will give water tinctured with a blue color or with vermillion to a thirsty beast to drink, preferably to a swine, for this beast is not fastidious but dirty, and will then cut the beast's throat after the drinking, he will find it colored with the fluid." Nevertheless he says the greater part of it goes to the stomach. At the end of the Fourth Book on Diseases the author distinctly combats the idea that drink passes through the larynx. It is evident, therefore, from these quotations that no one man, but several, wrote the so-called Hippocratic treatises. History tells of the great rewards offered by the Ptolemies for manuscripts of well-known authors for their great library, and nothing seems more certain than that enterprising, and of course highly-respectable "rare-book" dealers, found it more convenient to write than to find hitherto unknown treatises of Hippocrates. The author of the Fourth Book on Diseases says, referring to the epiglottis, that the presence of a process in the form of an ivy leaf prevents liquid from entering the larynx and keeps it in the pharynx. He declared that the sounds emitted on expiration were multiplied by the resonance of the head. The tongue articulates as the air is driven out striking against the palate and the teeth. "All of which shows that it is the air which makes the noise." In the book on the "Flesh" (19) it is recognized that severance of the larynx stops the voice, which is regained when it is reunited.

On the subject of the destination of liquids when swallowed, there is a very curious chapter among Plutarch's "Symposiacs (Book VII). When a line from the poet Alcæus (611, 580 B.C.) was quoted, "Now drench thy lungs with wine, the dog appears"† (Dog Star), Nicias of Nicopolis, a physician, is made to say that Plato should be reproved for the passage in the *Timæus*‡ where he

* Liber de Corde. Edit. Kühn I, p. 485.

† Vid. Gaisford: Poet. Min. Graec. Vol. III, p. 321, XVIII.

‡ The passage referred to reads "the lung is a soft and bloodless organ, and moreover is full of pores internally, like a sponge, in order that receiving air and drink it may refresh the heart, quiet it and cool the heat which burus it. This is the reason why the channels of the trachea are directed towards the lung, and the lung is placed near the heart." A few lines further on it is evident, however, that Plato recognized that some of the liquids at least go to the stomach, or rather "the region between the diaphragm and the navel."

adopts the same error. He enters into an argument in refutation of the idea that the drink passes into the lungs, and he instances the epiglottis as an apparatus for preventing it. In the discussion which followed Protogenes, the grammarian, claimed that Homer first spoke of the stomach as the receptacle of the food, and of the breath and windpipe as the instruments of the voice, but the discussion on this passage in Homer hinged upon the meaning of the word *φάρυγξ* which we have seen had a very indefinite meaning. Florus quoted many poets, among them Euripides, who affirm with Plato that the drink passes into the lungs and the conclusion of Plutarch's Symposium seemed to be that Plato was right. Florus asserts that not only Hippocrates, but his pupil, Dioxippus, (390 B.C. ?) and Philistion, a very ancient physician of Locri, had no other thought. Dioxippus supposed that the epiglottis served to divide the food and drink into the coarser parts which passed into the stomach and the finer parts which passed into the lungs. Aristotle* did not share this error at all, but distinctly states that the larynx is only for the passage of the air and the voice. From a passage in this symposium Sprengel seems to draw the conclusion that Erasistratus taught that the drink does not pass into the lungs. Now, Plutarch's writings are of a date in the first century of the Christian era, 500 years after the time of Hippocrates and 400 years after the time of Erasistratus. One hundred years after Plutarch we will find even Galen in a modified form entertaining this idea. He says, in reference to it: "If Plato supposed that we take all our drink into our lungs, it is proper to remark that he was ignorant of a very evident matter. If he supposed, however, some part of the drink passing through the trachea is carried to the lungs, he announces a thing possible and like other matters concerning which physicians and philosophers may disagree among themselves." He then proceeds to state that it is quite possible for a small amount of fluid to steal down the sides of the air tubes without producing irritation sufficient to cause a cough.

We may, since we have already digressed somewhat, add here another mention of Hippocrates by Plutarch. † He compliments him as a man of wonderful skill in physic and fit to be imitated by the greatest philosophers, especially as to his ingenuousness for "he confessed publicly that he had mistaken the nature of the sutures

* On the Parts and Gait of Animals. III, 111, 4.

† Man's Progress in Virtue.

of the skull,* and has left an acknowledgement under his own hand; for he thought it very unworthy a man of his profession not to discover where he was in the wrong seeing that others might suffer and err by his authority." Plutarch's comment on this is quite as applicable to-day as in his own time. "And indeed it had been very unreasonable, if he whose business and concern it was to save others and set them right should not have had the courage to cure himself and to discover his own weakness and the imperfections in his own faculty." Quintilian echoes Plutarch's eulogium.†

When we realize that the ancients, Hippocrates, Galen and their followers, knew nothing of the muciparous glands, and of course nothing of the function of these microscopic structures, it is easy to understand the absolute mental necessity for them to find some explanation of the origin of the secretions which bathe not only the respiratory tract but the gastro-intestinal mucous membranes as well. As for the moisture of the lungs, it is natural that they should look for some explanation in the liquids swallowed. This lack of knowledge, as well as a mistaken anatomical observation, led them into another error which persisted still longer. The cribiform plate of the ethmoid bone (the sieve like bone) at the top of the respiratory tract, was usually seen only in the dried specimen by the ancients unfamiliar with dissection of the human body. The idea arose that the humors were distilled in the gland like contents of the cerebral cavities and sifted through the cullender plate of the ethmoid to parts below. If we can find no trace of this idea in Hindu or Egyptian medicine, Herodotus‡ supplies us with indubitable evidence that it existed among the Libyans. He says: "The Libyans, when their children come to the age of four years, burn the veins at the top of their heads. Others burn the veins about the temples. This they do to prevent them from being plagued in their after lives by a flow of rheum from the head and such they declare is the reason they are so much more healthy than other men. In all this I only repeat what is said by the Libyans themselves." This burning, as we shall have occasion hereafter to note, was the sovereign Arabian cure for all diseases.

The Origin of
Catarrhs.

This idea of the cerebral origin of catarrhs once fixed in the conception of medical men was not detected as an error even by Galen himself, whose anatomical knowledge was so extensive.§

* Vid. Hippocrates: Epid. V, § 27—cf. De Vuln. Cap. § 12.

† Celsus, from whom probably Plutarch and Quintilian drew their information, remarks in regard to Hippocrates' superiority in this respect over lesser men. "Nam levia ingenia, quia nihil habent, nihil sibi detrahunt." Lib. VIII, Cap. IV.

‡ Liber IV, Cap. 187.

§ Vid. Galen: "De Instrumento Odoratus." Cap. iv.

They supposed that the airs and vapors, as they called them, were inspired through the cribiform plate by the brain acting like a live sponge drawing up into itself not only the moisture but the air of the nasal cavities and then redistilling them. Hippocrates says olfaction takes place through the cribiform plate. The latter he describes as being made of cartilage, soft like a sponge, and is neither flesh nor bone.* So entirely had this conception of the anatomy and physiology of the cribiform plate taken possession not only of the medical mind, but so completely had it passed into the popular mind, that it was supposed that the mental processes were sluggish in those in whom the faulty excretion led to a clogging of the brain with mucus. Hence, we find in Greek that not only Coryza stands for a cold in the head, but it was the name applied to a fool, a driveller. Still more was this evident in the Latin tongue. "Emunctæ naris" refers to the mental acuteness of the individual because he was supposed to keep his nostrils, the cloaca of the brain, well cleaned out. This is found chiefly in the satirists.

"Hinc omnis pendet Lucilius, hosce secutus
Mutatis tantum pedibus numerisque, facetus,
Emunctæ naris, durus componere versus."

Horatii Satira I, IV, 6.

"Obesæ Naris," fatty or obstructed nose, in distinction to "emunctæ naris" referred to mental dullness. Many similar passages may be found in Martial. Hippocrates believed that in order to smell well the nose must be dry, and probably this arose from the observation of obtunded olfaction during a cold. He supposed that the vaporous parts of the inspired air escaped through the sutures of the skull.

Hence we may understand why Hippocrates looked upon the brain, which he described as a gland, as the origin of all catarrhal troubles, naming seven, of the eyes†, of the nose, of the ears, of the stomach, of the throat and lungs, of the spinal cord and of the hips. The acrid humors were distilled to these parts by various routes—to the respiratory and digestive tracts through the cribiform plate—but all starting from the brain.

Coryza.

In his book on "Ancient Medicine," where he protests against the entertainment of hypotheses as to etiology, Hippocrates describes the symptoms of a coryza. "This discharge is much more acrid than that which is usually found in and runs from the nostrils

* "The Flesh," No. 16.

† The Glands 10.

daily; and it occasions swellings of the nose and it inflames, being of a hot and extremely ardent nature, as you many know if you apply your hand to the place; and if the disease remains long, the part becomes ulcerated, although destitute of flesh, and hard, and the heat in the nose ceases, not when the defluxion takes place, and the inflammation is present, but when the running becomes thicker and less acrid and more mixed with the former secretion; then it is that the heat ceases." One of the Aphorisms (II. 40) reminds us that catarrhs and coryzas are not severe in old people. It is clear from a passage in the "Airs, Waters and Places" that Hippocrates believed that not only do stomach catarrhs have their origin in the head, but that nasal catarrh produces gastric symptoms. "Their bellies are subject to frequent disorders, owing to the phlegm running down from the head." Another modern idea we are reminded of in the relation of a case* of habitual catarrh which was cured in three days by coitus.

Cyanche, which English translators usually render as quinzy, is a term Hippocrates applied to nearly all the acute inflammations of the throat. Littré (V. p. 579) discusses the question as to whether Hippocrates was familiar with diphtheria. Croup, Littré calls it. It is doubtful whether the cases are sufficiently differentiated in the Hippocratic writings to make them intelligible to modern readers. Even in the time of Littré's edition (1846) they would seem more intelligible than in these bacteriological days. They were of a very severe type, apparently, whatever the nature of them. We may conjecture that the peculiar and striking features of Ludwig's Angina or erysipelatous pharyngitis and laryngitis arrested Hippocrates' attention and caused him to record the case† of "the woman affected with quinzy who lodged in the house of Ariston." Profound constitutional symptoms, severe external swellings, and evidently internal stenosis causing dyspnea and the return of fluids by the nose rapidly brought the case to a fatal termination. The etiology of cyanche was supposed by Hippocrates to be the coagulation of the blood in the vessels of the neck. One cannot imagine what sort of an angina could be the cause of opisthotonos‡ lasting forty days and getting well. One has only to refer to "Diseases II," 26, 27, 28, 29, 30, 31, 32, to perceive how severe was the type of throat inflammation with which the Hippocratic writers were familiar and yet how im-

Acute Throat
Inflam-
mations.

* Epidemics: V. 72, and VII. 69.

† Epidemics, III-VII.

‡ Internal Affections, 53.

possible it is from the description to more than guess at the class we would now put them in; as, for instance, No. 26 seems to have been diphtheria, while accounts of the others indicate, some of them a milder type of disease, and some ending fatally, but apparently not diphtheria. In the "Coan Prognostics" is a paragraph (II 14) which deals entirely with the prognostics of acute throat inflammations, but it is of little modern interest. In the "Aphorisms" (IV 34, 35) Hippocrates declares that "if a person laboring under a fever, without any swelling of the fauces, be seized with a sense of suffocation suddenly, it is a mortal symptom." Moreover, "if, in a person affected with a fever, the neck become suddenly distorted and he cannot swallow, except with great difficulty, although no swelling be present, it is a mortal symptom." Antitoxin, tracheotomy and intubation have of late years somewhat impaired the force of this prognosis, but we still recognize the gravity of the condition.

Intubation.

Since the following passage contains an indication that the idea at least of intubation existed in Hippocratic times, and because also it is a striking bit of objective description, I will translate it as literally as possible from Kühn's text (Vol. II, p. 300):

"*Cyanche*.—From *cyanche*, so-called, a man chokes, and it seems to be especially in the pharynx, and he is unable to swallow his spittle or anything else, and his eyes are affected and start forth as in those strangling, and he stares with them straight ahead, and he is not able to turn them, and he hiccups and starts suddenly up, and the countenance and the pharynx are burning, and even the neck. To those looking on there seems nothing the matter. He sees and hears dully, and from the dyspnea he knows not what he says, nor hears, nor does, but lies there with open mouth drooling and acting thus. He dies on the fifth or the seventh or the ninth day.

"*Para-Cyanche*.—When some of these symptoms are absent, it appears the disease is not so severe and they call it *para-cyanche*. It is necessary to bleed, especially from the vein beneath the nipple of the breast, for this naturally follows from the hot breath, *pneuma*,* of the lung, and it is necessary to purge by drugs or move the bowels by enemata, and to *pass tubes into the pharynx* along the jaws, so that the breath may be drawn into the lungs, and to make them as quickly as possible to spit and thin the lungs (clear them out?) and to fumigate with Sicilian hyssop, and with sulphur, and with bitumen, and to breathe these in through the tubes and through the nostrils so that the phlegm may be cleared out, and the pharynx

* For accounts of the pneumatic dogma and the pneumatists see any of the histories of ancient medicine.

and the tongue may be cleaned in those having phlegm, and the veins under the tongue should be cut; and blood should be drawn from the elbows if the strength is sufficient. Abstention from wine should be enjoined and thin barley water should be taken. After the disease has subsided and the appetite returns, purging with fresh elaterium should be employed so that he may not fall into another illness." The appearance of an external rash in all these cases of severe, possibly scarlatinal and diphtheritic pharyngitis and laryngitis, was thought by Hippocrates and Galen, and reasserted by Avicenna, to be a good sign.

In "Diseases II," 30 and 31, he recommends hot fomentations for what is apparently peritonsillitis, and scarification of the tonsils, but this latter not with sufficient clearness to make us sure of the recommendation. He also speaks of treating external fistulæ, resulting from this affection, with the cautery. Evidently we have here a confusion of diseases according to modern classification.

The nature of the tonsils is explained (Glands 7) as round bodies placed on each side of the throat to absorb the secretions from the head and send them back there again, and to do likewise for the vapors. From acute and chronic inflammations they may become greatly swollen. For enlarged tonsils he advised evulsion with the fingers. Although we find in Hippocrates no mention of tonsillotomy, it is evident, from what is thought to be a genuine book of Hippocrates, viz: (The Prognostics I, No. 23) that he was familiar with uvulotomy. In a book of less assured authenticity we read his description of the operation. "When the uvula alone is inflamed seize it with the finger and press it up against the palate and cut off the end."*

Uvulotomy
and Evulsion
of the Ton-
sils.

As has been intimated the Greek physician had every opportunity of familiarizing himself with fractures of the nose. The Hippocratic writers devote much attention to it. In "Mochlicus" 2, Articulations 35, 36, 37, 38, 39, we find minute and practical directions for its treatment. Indeed, comparatively little advance has ever been made over their methods. Great stress is laid upon the necessity of replacement within the first twenty-four or thirty-six hours after the injury. Satisfactory adaptation of the parts must be attained notwithstanding the patient's suffering, if a good result is to be reached. Hippocrates complains bitterly that the patient strongly desires the latter without being willing to submit to the former. For lifting the fragments of bone into place he preferred the fingers, making use of those of some boy or women assistant, if

Fractures of
the Nose.

* "De Morbis" II, 29 and 49.

possible, because of their small size and their softness. Internal splints from "Carthaginian leather" or other suitable substances were used. He condemns the use of sponges for the purpose because they soon become foul with the discharges. He relates how in one case he made use of a piece of the lung of a sheep, probably as a temporary expedient. Sacrificial altars to the gods were always near the fields where the games were held in which many of these accidents occurred, and we may imagine the resourceful surgeon quickly cutting a piece of the soft elastic tissues from the open chest of the slaughtered victim and inserting it into the nostril of some vanquished athlete. While perhaps it is not so curious, a more valuable suggestion is contained in his description of the method of treating lateral displacements of the nose, of course when recent. An internal splint was inserted as usual and then a long leather thong was glued at one end to the point of the nose which was pulled beyond the median line to the opposite side, and the thong wound around the head and fastened by gluing to the temples or in some other convenient fashion. This could then be pulled more taut or loosened as occasion required.



From "Galen Opera Omnia," Basel, 1561, Vol. 6, P. 593.

Hippocrates* indulges in some satirical and still instructive remarks concerning bandages for a fractured nose.

"Those who put great store by a senseless dexterity rejoice to meet with a fracture of the nose in order to apply a bandage. For a day or two the physician takes great pride in himself, and the patient rejoices; but the latter soon tires of wearing the bandage, which is annoying; as for the doctor, it is enough for him to have shown that he understands how to put various bandages on the nose. Such a bandage does, however, quite the contrary to what is desired; on the one hand, in those in whom the nose had been sunken, it becomes markedly more sunken if pressure is exerted over it; on

* "Articulations," 35.

the other hand, in those in whom the nose has been dislocated to the right or to the left, either in the cartilaginous, or in the upper part, these, evidently, far from deriving any advantage from a bandage placed on it, suffer harm from it." We look in vain for any reference to operation for straightening a chronic deviation of the septum. It is a little surprising that with the experience derived from the treatment of recent fractures and dislocations of the nose, they should have failed to remedy the chronic lesion which must have been frequent enough. He insists that external wounds or comminution of the fracture are not contra-indications to his plan of treatment. He must have witnessed the results of tremendous blows, probably with the cruel cestus, the iron shod glove of the boxer, for he speaks of the sinking in of the bridge of the nose when there is also exfoliation of the bone of the hard palate. Evidently in these dangerous encounters fracture at the base of the skull was an occasional result. At least he was familiar with its characteristic symptom, for he says: "A contusion of the head without an external wound, either by fall, fracture or compression, produces in some cases the flow of acrid humors which run from the head into the throat." Possibly, however he may here refer to suppuration as a result of intranasal fracture.*

We have just seen that Hippocrates was familiar with depression of the nasal arch as the result of injury. That he was familiar with it as the result of disease would appear from† the relations of the cases of two‡ children who from ulceration lost their teeth and pieces of the bone of the palate. This caused a sinking of the nose. They also had a bloody muco-purulent discharge. This description sounds very much like that of syphilis, either congenital or tertiary. This is thought by the majority of writers to have appeared first in Europe two thousand years later, brought from America by Columbus' sailors. This sinking of the nose is again referred to in another place.§. It is to be gathered from Galen's commentary|| that he also was familiar with a sinking in of the bridge of the nose due

Syphilis (?)

* These excerpts from fractures of the nose I have taken from Adam's translation of the "Genuine Works of Hippocrates."

† Epidemics, IV, 19.

‡ This is the reading of Littré's translation, and to my mind that of Kühn's text, but the latter's translation refers to but one child.

§ Epidemics, VI, 3.

|| Edit. Kühn: Vol. XVII A, p. 823.

to a loss of substance in the structures beneath. Daremberg* has suggested that syphilis is the disease referred to by Hesiod (Fragm. 27, 28) who betrays a knowledge of some skin diseases in aphrodisiac women. After a perusal of the text alluded to, it seems to me very doubtful if this was the Corona Veneris as Daremberg surmises, though crusts and blotches were found in the scalps of these women. The passages here cited from the Hippocratic writings and from Galen seem much better evidence of it. We are unfamiliar to-day with any other disease of the palate and gums of a chronic nature which is accompanied by exfoliation of bone and the sinking in of the nasal arch. The nasal arch will not sink from the loss of the palate bone, except the nasal bones themselves are affected at their junction with the bony septum. Of course it may possibly have been some severe case of scurvy or phosphorous poisoning, but producing such results as these it seems very unlikely.

Nasal Polypi.

Probably there is nothing in the Hippocratic books so familiar to the modern rhinologist as Hippocrates' sponge method of removing nasal polypi.† Indeed this was a method practiced by Voltolini and mentioned in his text book.‡ Until the comparatively recent invention of the steel wire snare, it compared favorably with other methods of ablation. An interesting paper on the "Rhinology of Hippocrates," by Baldwin,§ is largely taken up with a discussion of the various methods recommended by Hippocrates for the removal of nasal polypi, and the accompanying illustrations elucidate the procedures very much. There were several methods. The sponge method was used for those soft pendent polypi which move out and in the nostril on expiration and inspiration. It consisted of tying the ends of three or four strings to a sponge cut to the proper size and shape. The other ends knotted together were fastened to the eye of a soft slender tin or leaden probe which was pushed through the nose into the pharynx. The ends of the strings thus secured were passed over the end of a forked probe held in the pharynx. By traction across this, the sponge was dragged into the pharynx, if successful, bringing the polyp with it. In another method for harder growths, perhaps our fibrous hypertrophies, the principle of the snare was em-

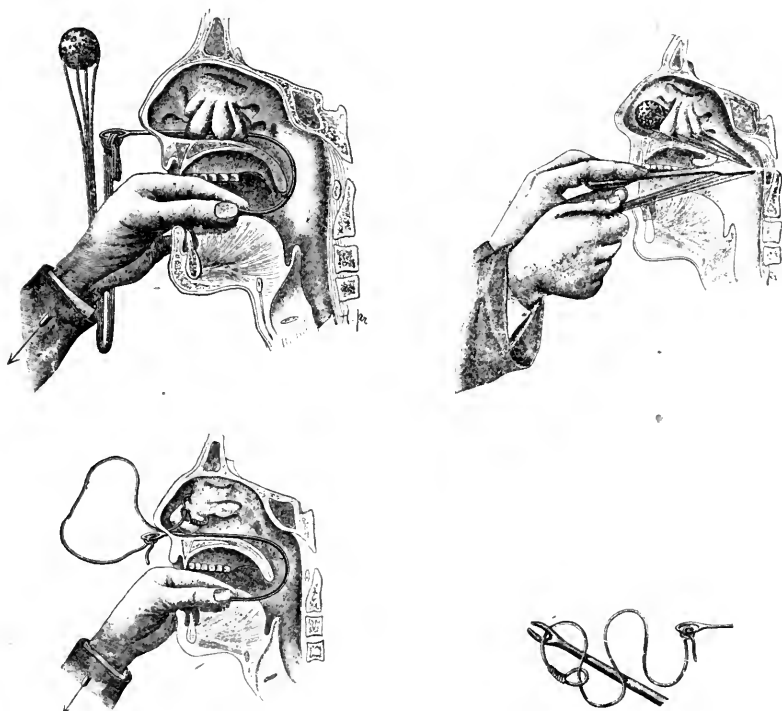
* *Etat de la Médecine entre Homère et Hippocrate.*

† *Diseases II:* This book, from which I have quoted so freely, is said to have been written by Draco and Thessalus, sons of Hippocrates.

‡ "Die Krankheiten der Nase," 1890.

§ "Zeitschrift für Ohrenheilkunde," Bd. XXVIII, Hft. 2.

ployed. The loop of a sinew was adjusted around the polyp, and the end having been carried to the pharynx and traction made as before, evulsion was attained. For still harder growths which Baldwin conjectured may have been bony cysts, he employed cauterization with a hot iron through a hollow tube used as a speculum. I do not see any reason for imagining this procedure was for this rare form of intranasal growth. It may easily have been many other



From Baldwin.

pathological conditions, more likely to come frequently under the observation of the physician, such as cartilaginous spurs and hypertrophies. He speaks of a fleshy growth in the nostrils which he calls cancer, to be treated by the cauter, but as he says nothing about the strikingly fatal symptoms which ensue from any form of local treatment of malignant growth of the nose, it is doubtful if his term is equivalent to the present acceptance of it. He doubtless

had encountered rhinoliths, for he speaks of something in the nose which, when you touch it with a probe, sounds like a stone. For this he recommended an external incision. After all these radical operations he advised the application of copperas powder and the insertion of tents in the nostrils smeared with oil and honey, no doubt to prevent synechiæ and stenosis. I think that all rhinologists will agree that these procedures for the time were not bad intranasal surgery.

From the book on "Affections" we learn that all diseases come from the phlegm and the bile. The Hindu idea was that all bodily diseases come from Wind, Bile and Phlegm. Indeed, there are many resemblances in this book as well as the one I have just quoted from which remind us of the Susruta. Polypi were supposed to be caused by the phlegm. It was derangement of these elements which produced diseases according to the Hippocratic authors. These books are not supposed to have been written by Hippocrates himself. Indeed, he explicitly discourages all theorizing as to etiology in his book on Ancient Medicine.

Epistaxis.

In various places Hippocrates has much to say of nasal hemorrhage as a symptom in many diseases, and in *Airs, Waters and Places* remarks that persons under thirty years of age are liable to severe bleeding at the nose in summer. In the *Affections* (No. 27) recommendations for stopping epistaxis include cold externally, a tent in the nostril, styptics and purging. One of the *Aphorisms* shows that he was familiar with vicarious menstruation as a cause of the nose bleed. "In a woman when there is a stoppage of the menses, a discharge of blood from the nose is good." (V. 33).

Sinusitis (?)

Various other references to diseases of the upper air passages may be found in the *Aphorisms*, and among them one (VI. 10) referring evidently to the symptoms of aural or nasal sinus disease:

"In a person having a painful spot in the head, with intense cephalalgia, pus or water, running from the nose or by the mouth or at the ears, removes the disease." It was supposed, as we have seen, that the origin of this discharge was the brain.*

The last of the *Aphorisms* applies with especial force to the nose and throat, though it is meant of course to be of general application. (VII, 87). "Those diseases which medicines do not cure, the knife cures; those which the knife cannot cure, fire cures; those which fire cannot cure are to be reckoned wholly in-

* Vid: Galen's Commentary. Edit. Kühn: XVIII. A. 20.

curable." A similar apothegm is found in the Hindu Susruta.

In the clinical notes which go under the title of Coan Prognostics we find an intimation that phthisis pulmonalis is a result at times of nasal catarrh, cases thus arising being considered most dangerous of all. (II, xxi, 430). This is a superstition which still lingers in medicine and is continually reappearing in some form or other.

There is a passage in this book which is of considerable value in the differential diagnosis of hemoptysis especially among a people who drink directly from brooks and springs and pools in the primitive fashion. (II, 17). "In those in whom the throat becomes filled with blood several times, day and night, without preceding pains in the head or cough or vomiting or fever or pain in the chest and back, look in the nose and throat. You will find there either a wound or a leech."

It must be borne in mind that there are many other passages in the Hippocratic books of great interest to the laryngologist, but I have already cited enough to convince the reader that a compilation of them all would make a brochure on the diseases of the nose and throat which no modern student of laryngology could afford to despise.

FROM HIPPOCRATES TO CELSUS.

There now followed a period of more than four hundred years before a medical work was given to the world which was destined to survive the ravages of time, the vicissitudes of empire and the vandalism of man, and to transmit to us at first hand the state of medical knowledge in the Roman world at the zenith of its power and vigor. From Hippocrates to Celsus is a long stretch in the history of the world. It is crowded full of events of absorbing interest and importance to our present civilization. It witnessed the rise and glory of Grecian civilization and its absorption into the world-wide domain of imperial Rome. In the Hippocratic era tiny Greece was battling with that huge menacing bulk of Oriental despotism, the enervating and soul-enslaving empire of the Persian kings. In that death struggle for our civilization she rolled back from Marathon (490 B. C.) Platea (479 B. C.) and Salamis (480 B. C.) that tide of stifling slavery and voluptuous sensuality which was threatening to engulf the garden she had planted and to extinguish the torch she had lighted at fires long since quenched by this very Orientalism. From the rugged mountains and wind-swept isles of Greece this eastern terror recoiled to the plains of Asia.

Ninety years later, ten thousand Greeks, a mere handful among millions, marched fifteen hundred miles into the heart of the Persian empire and after putting to flight an army of a million men turned around and cut their way out again. When next they plunged into Asia, seventy years later, it was with the youthful Alexander at their head. They dismembered the lifeless body of Orientalism which had been so long a menace to them, and for a thousand years it lay prostrate before it again threatened the civilization of Europe. When it was again about to inundate the budding civilization of the west, Don John, of Austria, at Lepanto (1571) and John Sobieski, with his Poles, at Vienna (1583) again stemmed the rising tide and forced it back. In the century which now opens before us, the drama of two civilizations played on the stage of the world for twenty-five hundred years by the immortal gods is, let us hope, drawing to a close. Although the ancient Greeks shattered the cohesiveness of the mighty Persian empire they could not graft on the barren limbs of Orientalism the buds of their own fructifying activity. In vain did the generals of Alexander and their successors call around them the most brilliant minds of the age. The libraries of Pergamos and Alexandria, with their hundreds of thousands of volumes, and the great schools which were founded with lavish expenditure of Oriental treasure wrung from slavish races by their Grecian rulers, advanced enormously the state of medical knowledge, but these institutions with the records of their own and of past scientific labor, planted in a land powerless to defend them, perished utterly at the hands of a succession of ruthless Roman and Saracen conquerors. The universal prevalence of the spirit which creates such monuments is the only bulwark which can defend them.* As Gibbon suggests† the loss to literature pure and simple was probably not great, but to medicine and science it was irreparable, for only in such a collection of books can we hope to find those of ancient date which appeal to the understanding of man rather than to his emotions. It is the historian of science alone who fully realizes that the destruction of the great libraries accomplished greater wrong to humanity a thousand times over than any event history records. The great poets, historians, dramatists have many of them been preserved to us, but not so the records of those parts of civilization which administer directly to man's material comfort and health, and thus indirectly to his happiness.‡

The Schools of
Pergamos
and Alex-
andria.

* "Il n'y a pas de système qui puisse durer autrement que par des institutions." (Guizot)

† "The History of the Decline and Fall of the Roman Empire," Vol. V, P. 228.

‡ The School and the Library of Alexandria was founded 320 B. C. by the Ptolemies and was finally destroyed 640 A. D.

We are reduced, therefore, again to the necessity of scanning secular literature and of extracting second hand from the later works of Galen, Pliny, Oribasius, Rufus, Aetius the scanty records of the labors of more original workers than they. We have every reason to believe that enormous strides were made in anatomy by the schools of Alexandria where dissection of the human body was first certainly regularly pursued. It is even said that the school of Alexandria indulged in the practice of human vivisection.† This is related with a shudder by the historians who delight to report the innumerable tortures inflicted upon innocent men by their fellow-men from motives of ambition, pride, lust and revenge. The statement is received with horror by a cultured and refined public, who peruse with pleasure and avidity the other pages of history reeking with gore and replete with accounts of human misery. Erasistratus, Herophilus and their confrères, if they did it at all, seemed to have pursued their investigations on gentle murderers and other virtuous criminals, out of the reprehensible motives of enlarging the boundaries of human knowledge and increasing the powers of man's benevolence and humanity. This practice attributed to the Alexandrian school has been denied and certainly not satisfactorily proven. Dissection of the dead human body as well as of animals, however, did at this period, create the science of anatomy. The records of this fruitful activity have, as has been said, utterly perished, but we may see from the works of Hippocrates and of Aristotle how deficient was the knowledge of human anatomy before, and from the works of Galen how enormously increased it was after the foundation of the libraries and schools of Pergamos and Alexandria. Anatomy.

Singular to say, Aristotle (384-322 B. C.), who dominated the medicine and the philosophy of the dark ages, and who was said to have long practiced physic before he devoted himself to pure science, has left behind him very little pertaining directly to medicine, notwithstanding his profuse contributions to nearly all other branches of knowledge. Nevertheless we may find in his works a few indications of his conception of the anatomy of the upper air passages. He placed at the top of the nostrils a kind of a lid which rises at the time of inspiration to let in the odors. "There is no passage from the ear to the brain, but there is to the roof of the mouth." He described the larynx as the organ through which the voice and the breath pass, and as situated in the front part of the neck. He says the trachea is cartilaginous and surrounded by smooth rings and

† Celsus: "Lib. I., Proenmium."

contains but little blood. "It lies at the upper part toward the mouth opposite the passage from the nostril to the mouth, wherefore if any liquid is drawn into it in drinking it passes out of the mouth through the nostrils." "Between the passages is the epiglottis, which can be folded over the passage which extends from the trachea to the mouth; by the epiglottis the passage of the tongue is closed; at the other extremity the trachea reaches to the middle of the lungs." "The heart is connected with the trachea by fatty cartilaginous muscular bands." The uvula is described as a very vascular organ. He speaks of the epiglottis as part of the tongue. He recognized* that the voice was produced within the trachea by the impact of the air, inspired by the soul which he thought resided in the heart and lungs, against it. "It is the voice and the larynx which emits vowels; it is the tongue and the lips which form the consonants, or the aphonic letters."† As we have seen (l. c.), Aristotle was free from the error of supposing that drink passes into the lungs.

Praxagoras was the last of the *Æsclepiadæ* of whom we have record. We read in "Cœlius Aurelianus‡ that he recommended cutting off the end of the uvula or scarifying it deeply when it was greatly inflamed. He transmitted the medicine of Hippocrates to his pupil Herophilus (300 B. C.), the great anatomist of the Alexandrian school. He is said to have instructed the latter in the knowledge of the pulse, which he afterwards so greatly developed. Pliny refers to Herophilus as the "vatis medicinæ,"§ the oracle of medicine. He, in all probability, contributed greatly to the anatomical knowledge of the upper air passages, but only the merest hints of it remain to us. Thus we learn from Rufus Ephesus|| that he called the hyoid bone the parastate because it was situated near the tonsils. According to Soranus, quoted by Oribasius (XXIV, C 31), Herophilus likened the cervix uteri gravidi to the larynx. Plutarch, from whom we have so often to quote, after mentioning¶ some incomprehensible theories of Empedocles and of Asclepiades, says that Herophilus attributes

* *De Anima*: II, VIII *vid.* Translation by St. Hilaire "Traité de l'Ame," p. 225.

† "Hist. of Animals," IV, Chap. IX.

‡ "De Morb. Acut.," III, C. IV.

§ "Hist. Nat.," II 37, 88 Sec. 219.

|| "Du Nom des Parties du Corps" (Edit. Daremberg), p. 155.

¶ "De Placit. Philosoph.," XXII.

a moving faculty to the nerves, arteries and muscles, but believes that the lungs are affected only with a natural desire of enlarging and contracting themselves. From the citation made by Marx in his brochure on Herophilus (P. 34), I would infer that the latter thought that the lung drove the air into the pleural cavity, and then, receiving it back again, expelled it externally. Erasistratus and Herophilus both knew that the arteries contained blood and that the pulse was connected with the heart, and yet apparently the circulation of the blood remained unknown for eighteen centuries. We learn from Celsus (Lib. IV, Cap. 11) that the former used ligation of the extremities as a remedy for hemoptysis. Eudemis (279 B. C.), we learn from Rufus (1 c.), compared the styloid process to the spur of a cock, but gave it no name. This* is a small gleaming from a period of several hundred years which marked the beginnings of the study of anatomy, but as to the upper air passages we look in vain for more, at least until the time of Asclepiades.

ROMAN MEDICINE.

Pliny is often quoted as saying that Rome for 600 years was without physicians but not without physic. Cato, the Censor, (b. 232 B. C.) we know had a very poor opinion of the doctors and in fact of learning in general. He was instrumental in driving Carneades and the other Greek savants from Rome in his day, but it cannot be conjectured that this arose from any skeptical turn of mind on his part, for in his book on Agriculture, amidst many receipts, amulets, charms and invocations we find him prescribing his favorite, almost his sole, drug for nasal polypus: "If there is a polypus in the nose rub together some dry wild cabbage leaves in the hand and place it at the nose and draw up the breath as much as you can. In three days the polypus will fall away. Nevertheless, for some days do the same; so that you may render the roots of the polypi entirely healthy."

It was not until the year 219 B. C. that Greek medicine found its way to Rome. Arcagathus was the first Greek physician, who, about that time, came to Rome.* He was very unsuccessful. We may read in Plutarch's Life of Cato, the Censor, how the Romans treated Carneades, the Athenian philosopher and Ambassador, in order to appreciate the prejudice with which

* "Cassius Henina, among the most ancient authors, is authority for the report that the first of physicians to come to Rome from the Peloponessus was Archagathus, the son of Lysania, in the year of the City, 535."—(Plinii Naturalis Hist. Lib. XXIX Cap. 1-6.)

the sturdy but rude old patricians of ancient Rome viewed the introduction of Greek civilization. It has always been noted in the history of the world that the first advances which have tended to ameliorate the asperities, to increase the amenities, and to introduce a wider knowledge among a rude and vigorous people have met with the suspicion and contempt of the conservative majority, who look upon the innovations as the first steps towards effeminacy and degeneration. It was not until the time of Asclepiades (100 B. C.) the friend of Cicero (106-43 B. C.) "is quo nos medico amicoque usi sumus, tum eloquentia vincebat ceteros medicos"* that the art of medicine really began to flourish in Rome, and we soon find Cicero describing the wonders wrought by the immortal gods,† not the least of which are the marvels of the human anatomy. "It will be more easily appreciated what has been done for man by the immortal gods, if the whole fabric of man is examined, and the perfection and method of human structure is brought to our comprehension. The life of living creatures is maintained by three things, by food, by drink and by the breath (spiritus) and for making use of these the mouth is especially adapted because it is reinforced by the air from the adjoined nostrils. The food is masticated by the teeth arranged in the mouth, and by them divided and softened. The sharp front teeth divide the food when bitten, and the back ones, which are called the true teeth, prepare it and this preparation seems to be aided even by the tongue. The esophagus, adherent to the tongue at its root, receives from it that which has been received by the mouth. This, touching the tonsils on each side, is continuous with the end of the palate and this it is which receives the food after it has been pushed along by the movements of the tongue, and passes it downwards. Those parts which are lower down than that which swallows (the food) are dilated, while those parts above are contracted. But since the "Aspera Arteria," for thus it is called by physicians, has an opening joined to the roots of the tongue, a little above where the esophagus is joined to the tongue, and since this reaches to the lungs and receives the air (or soul-anima) that being received from the breath (spiritus) and this being inspired and again returned, it is protected, as it were, by something like a lid, which is provided for the reason that if by any chance food should fall in it, the breath would be stopped. Since by its nature

Cicero's Anatomy and Physiology.

* "De Oratore," I Cap. 14.

† "De Natura Deorum," II. 54.

the belly, attached below to the esophagus, is a receptacle for food and drink, and the lungs and heart form an exit for the breath, in the belly many things are admirably arranged, which it is about agreed, are (controlled) from the nerves (*nervis*). It (*i. e.*, the gastro-intestinal tract) is, however, multiple and tortuous, and it encloses and holds that which it receives whether it is dry or wet, so that it may be altered and digested; it is by turns contracted and relaxed, and everything which it receives it compresses and mixes, so that all things, prepared and digested by the heat, of which it has much, and by the attrition of the food and especially by the breath (*Spiritus*), are distributed to the rest of the body. In the lungs, however, there is a certain looseness of texture and a softness, similar to the sponges, most carefully adapted for drawing in the breath. They in turn contract on expiration and dilate on inspiration, so that the nourishment by which breathing creatures are principally supported may be frequently taken in."

In another passage (*Ibid*, Lib. II, Cap. 57) Cicero intimates the existence of further knowledge of nasal physiology in his remark: "Likewise the nares, which are always open on account of necessary functions have narrower entrances lest anything which might be injurious should enter them, and they always are supplied with a moisture not useless for arresting dust and many other things." Of course we can not suppose that Cicero included bacteria in his "*multaque alia depellenda*."

After all, these passages from one of the greatest masters of human speech who has ever lived, and a man profoundly imbued with all the knowledge of his day, are perhaps not a bad index of the state of knowledge of the anatomy and physiology of the air and food tracts. It is a great advance over anything we can find in Hippocrates and Aristotle.

As to Asclepiades, that eloquent rhetorician of Bithynia, the friend of Cicero and Crassus, the great advocate of diet, exercise and massage, and enemy of bitter doses and radical treatment generally, we have only a few fragments, collected by Gumpert. He made a great stir in his day; he declared that so perfect was his regimen, disease had no terrors for him; he was never sick and only died because he fell from a ladder and broke his neck in extreme old age.* Synanchet† he said was "a flow of the humours or a wetness of the fauces, or rather of the very top of them, coming down from the head." Besides the purging and bleeding he scari-

Asclepiades.

* Pliny: *Hist. Natur.*, VII, 37.

† Cœlius Aurel. *de Morb. Acut.* III, I. c.

fied the tonsils and the fauces around them. Moreover he approved of the practice of incision of the trachea as recommended by the ancients, which they called laryngotomy,* to relieve the respiration. Themison, the founder of the school of Methodists and a follower and disciple of Asclepiades also approved of this surgical operation. Celsus (Lib. IV, Cap. IX), quotes him approvingly and recommends his prescription of swallowing strong vinegar in ulceration of the fauces, and says that he condemned the practice of Erasistratus ligating the extremities for hemoptysis. With this condemnation Celsus does not agree. So far as the throat is concerned, therefore his practice to-day would not be called very mild or conservative.

* Cælius Aurelianus (de Acut. Morb.) Lib. III, Cap. IV, Edit. Amman P, 193—Asclepiades—"At si major (inquit) passio fuerit, dividendæ sunt fauces, hoc est tonsillæ et partes supra uvam constitutæ; etenim summa est in his æqualis sive par incisura, quam appellavit *homatomia*. Dehinc a veteribus probatum approbat arteriæ divisuram, ob respirationem faciendam, quam laryngotomiam vocant, varie ac multipliciter peccans."

This is the first mention we find of this operation unless it is referred to in the Talmud. It is a good illustration of how much must have been lost from the old records. Cælius expresses the belief that the account of the ancients doing it was not true but an invention of Asclepiades.

(To be continued.)

SUBARACHNOID INJECTION OF COCAIN AS A GENERAL ANESTHETIC FOR OPERATIONS UPON THE HEAD.*

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As ophthalmology was the first field in which the practical use of cocain as an anesthetic was demonstrated and since that demonstration by Keller in 1884 has been in extensive use the world over as a local anesthetic in diseases of the eye, ear, nose and throat, those following this line are probably more familiar with its anesthetic properties than those in any other line of practice, hence its introduction into general surgery as a general analgesic should be of particular interest to us. Although the local anesthetic effect of cocain is amply sufficient for most of the operations we are called upon to perform, there yet remains a large proportion where a general anesthetic is necessary. Both chloroform and ether as general anesthetics have a large number of deaths resulting from their administration and it is a peculiar fact that most of the deaths have resulted when the operations were very simple. Complete unconsciousness is often one of great concern to the patient, and the surgeon is not always free from anxiety and worry. Added to these questions is the fact that there are many contra-indications to the administration of both ether and chloroform as a general anesthetic, where the risk is very great, as in kidney, lung and heart complications and where the vitality is very low as in the aged, hence the introduction of a general anesthetic having apparently no contra-indications of age, sex or disease is something of the greatest importance to us. Dr. J. L. Corning, of New York, I believe, was the first to demonstrate the subarachnoid injection of cocain in 1884, the same year that Koller discovered its local anesthetic effect upon the eye; but little was done with it, however, until Tuffier, of Paris, reported to the International Medical Congress of 1900, 130 cases in which he had been able to get profound analgesia and do all the capital operations on the lower extremities and below the diaphragm with the injection of 10 to 20 minims of a two per cent solution of cocain into the subarachnoid space; the space being reached by passing the needle between the third and fourth lumbar vertebra. Since that time the method has been tried by surgeons in nearly

* Read before the annual meeting of the American Rhinological, Laryngological and Otological Society, New York, May 23, 1901.

every part of the world. Until very recently, however, it has been thought that the analgesia did not extend above the armpits. Dr. A. W. Morton, of San Francisco, I believe, was the first to prove that complete analgesia could be produced all over the body by the lumbar injection and as my clinic at the City and County Hospital, San Francisco, falls on the same days with Dr. Morton, and at the hour just preceding his, I have had an opportunity of observing the detail of most of the 270 operations he has made under spinal injection. His success in the excision of a tumor from the lower lip prompted me to make use of it in our field. I therefore lay before you my experience, and although small, if taken together with the successful use of the method in general surgery, may serve to point the way to its use in *suitable* cases in our special field.

To Produce Analgesia of the Upper Extremities.—To produce analgesia of the head simply requires that when the needle is introduced it be pointed upward and that the cocain solution be *forced* in *quickly*, as the rate of diffusion of the solution in the spinal fluid seems to be in the ratio to the rate of injection.

Preparation of Patient.—The site of injection is prepared in exactly the same way and at the same time as the field of operation.

The Instruments Used and their Preparation.—A glass syringe, which has the barrel graduated and the piston ground to fit and can be readily sterilized by boiling is the one used. The needle is of steel, three inches long, with an external diameter of 1.1 m.m.; an internal diameter of 8 m.m. Its end has a short bevel with the concave portion of the bevel made dull which prevents it from cutting a plug from the skin and thus obstructing the lumen of the needle; it is connected to the syringe by a joint and with each needle there is a wire stylet. When the needles are not in use it is well to put them in a saturated solution of carbonate of soda to prevent rusting.

The Injection.—The surface of the lumbar region having been prepared, the patient is placed in a reclining position on either side and the back bowed out or made convex so as to separate the spine of the vertebræ and cause pressure of the cerebro-spinal fluid; the fourth lumbar is on an imaginary line connecting the crests of the ilium and just above this between the third and fourth lumbar in the center line the needle is introduced. Before placing the needle, however, it is best to freeze the point with ethyl-chloride and make a small puncture of the skin with the point of a sharp scalpel. The needle is introduced with the point directed slightly upward and by making firm pressure it is driven in carefully; one feels the dimin-

shed resistance as the point of the needle enters the subarachnoid space, which is about two and one-half inches deep, variations depending upon the thickness of the muscles. The only positive evidence, however, of the space having been reached is the appearance of the cerebro-spinal fluid in the lumen of the needle. No injection should be made until one sees the spinal fluid. It is possible that the needle may become obstructed by tissue, which can be removed by passing the stylet, or having the patient cough, or it may be necessary to withdraw the needle, see that it is not obstructed, and introduce it again. After a drop of cerebro-spinal fluid passes, the aseptic finger is placed over the needle and the syringe previously filled with the cocain solution is adjusted to the needle; the patient who has been in a bent position is now relaxed and straightened out to *relieve* the pressure of the cerebro-spinal fluid, then the solution to be injected is forced in *rapidly* the needle removed quickly and the needle puncture closed with sterile cotton collodion. For operations upon the head a maximum dose must be used, that is, 18 to 25 minims of a 2 per cent solution of cocain, and as the specific gravity of the cocain solution is less than that of the spinal fluid, the body is slightly elevated in order to favor its diffusion upwards. The analgesia is complete in the lower extremities and trunk in from 3 to 8 minutes, but it requires from 15 to 30 minutes for profound analgesia to reach the head.

Preparation of the Cocain.—This is the most important part of the technique. We are all familiar with the unstable character of cocain solutions, and with the great difficulty of sterilizing the solution without injuring its anesthetic properties. Dr. Wm. C. Riley, of San Francisco, has overcome all of these drawbacks by sterilizing the crystals of cocain hydrochlorate at a temperature of 300 F.; thus sterilized in crystal form no change takes place in the anesthetic qualities of the drug. As the toxic and disagreeable symptoms in the past attendant upon cocain injection have been found to be due to some of the by-products of cocain or to its decomposition product, the absolute purity, sterility and stability of the cocain solution is very essential, hence the market product at present must be carefully tested for the quantity of pure cocain it contains, and the by-product, especially isotropic cocain, which depresses the heart, eliminated. Dr. Riley's method is to dry-heat the cocain crystals at 100 C., pulverize and place in a rubber-stoppered jar; then 30 minimum vials are fired over a flame to kill the hay bacilli, and into each vial is weighed $\frac{6}{10}$ grain of the above-prepared cocain; they are then heated to 150 C. for 20 minutes; each vial is stoppered with a wax-

dipped cork, and so kept indefinitely till required for use; when sterile water is added to fill the vial we have a 2 per cent solution, which is certain and uniform in its action. This vial containing the dry sterilized cocain is not opened until the time of use. It is rendered sterile on the outside by immersing the vial in a solution of bichloride of mercury 1 to 2,000. When ready to make the solution, the vial and cork are washed off with sterile water, the cork removed and sterile water at a temperature of 105 F. is added, which makes a two per cent solution; this is removed from the vial to the syringe at the time of use. Although from 5 to 15 minutes is sufficient for profound analgesic action upon the lower extremities, it requires from 18 to 30 minutes to get satisfactory analgesic action upon the head.

The Usual Symptoms Following Injection.—There is usually some nausea 4 or 5 minutes after injection—sometimes vomiting, but this all subsides in a few minutes. There is usually some perspiration and slight cramps in the extremities. The pulse is a little rapid at the beginning, but soon becomes about normal and remains so.

The Unusual Symptoms Following Injection.—Sometimes a sub-normal temperature, chills and marked depression occur after the injection, which is now generally attributed to spinal shock due to the loss of too much spinal fluid and the injected solution not being up to the proper temperature. My cases have been without disagreeable incident, but as an example of what can occur I will quote from Dr. Morton's last report, in which he says: "I have never seen the symptoms alarming except in the following case, where I removed considerable cerebro-spinal fluid for analysis:

"Mr. Wm. V., aged seventy-two, City and County Hospital, carcinoma on the upper and inner part of scapula removed. Thirty-five minims of cerebro-spinal fluid were removed, and I injected 30 minims of 1 per cent solution cocain; analgesia complete in 3 minutes; pulse before operation, 80; respiration, 20; about 10 minutes after injection, pulse very weak at wrists; respiration irregular; heavy perspiration; pupils dilated; bowels moved. Patient was placed in Trendelenberg's position; artificial respiration with abdominal massage and stimulation by strychnia, nitro-glycerine and whiskey within ten minutes, pulse and respiration very good; operation was finished without pain; patient suffered with headache and nausea for 12 hours; evening temperature that day, 102 F.; next morning, 100 F.; pulse, evening, 104; morning, 93; otherwise continued normal; later injected same dose of cocain, with only a few drops of cerebro-spinal fluid passing, and cauterized carcinoma without any unusual symptoms.

Post Operative Condition of Patient.—There is frequently some headache, which lasts from 12 to 24 hours. Sometimes it is very severe, but is always relieved by 5 grain doses of antikamnia combined with $\frac{1}{2}$ grain of caffein, repeated in half an hour. There is sometimes a rise of temperature to 101 or 102 on the same day or the day following the operation, but it never lasts longer than two days. This temperature has been produced by injecting salt solution into the space, so it is inferred to be due to some disturbance of the heat center. There are sometimes involuntary passages on the table, so it is best to have cathartics used 48 hours before operation and not just the evening before, as is the rule in preparing for a general anesthetic.

The Question of Surgical Shock.—In none of my cases has there been surgical shock, even in the old lady, eighty years of age, for whom I enucleated an eye, and it is claimed by those doing capital operations that the patient suffers less from shock under spinal anesthesia and reacts much sooner and better.

The Question of Mental Shock.—As a great deal of our operative work is done under local anesthesia, with full consciousness of the patient and rarely produces mental shock, I do not think it enters seriously into the question now.

The Advantages of Spinal Injection in our Field.—A great advantage is secured in having the co-operation of the patient in many of the operations upon the ear, nose and throat, in that they can place themselves in more favorable positions and enable us to operate more rapidly and effectively; and after the slight nausea and vomiting immediately following the injection, we never have this to contend with in operations upon the throat, but, on the contrary, we have the assistance of the patient in clearing the field of mucous and blood and otherwise assisting us. Although I have not yet used the method in other operations upon the eye than that of enucleation, I can readily appreciate the tremendous advantage gained by having the intelligent co-operation of the patient when operating extensively upon the ocular muscles, as in advancements.

Apparently no Contra-Indications.—There being apparently no contra-indications of age, sex, or disease, it can always be used where either ether or chloroform is contra-indicated, as in kidney, heart and lung disease. It also can always be used where the patient objects to becoming unconscious, as in taking chloroform or ether, and thus a larger percentage of cases will be brought to operation early and proportionately better results secured.

The Question of the Safety of the Injection.—There have been up to this time about 3,000 cases reported and not one death which has occurred can be seriously attributed to the method; all this, too, when the technique of the method, the preparation of the cocain, etc., were uncertain. When the cocain is properly prepared, and the proper technique and instruments used, the method appears to be simple, safe and effective, and without any attendant dangers, although, of course, it is impossible to pass very definitely upon the value and safety of such an innovation until the technique is perfected and the results in several thousand cases reported.

The Physiological Action of Cocain in the Subarachnoid Space.—Just how the analgesic action is produced is not yet thoroughly understood; if normal salt solution is injected one gets every result except the analgesic action. Lewnadawsky has found that substances injected into the subarachnoid space enter the nerves, and structure of the cord directly without passing into the general circulation. He has demonstrated this by using ferro-cyanate of sodium and carmine. When the cocain solution is thrown into the subarachnoid space and diffuses through the fluid, it affects but one nerve sense, that of pain, which it abolishes. The senses of touch, heat, cold, motion and co-ordination remain intact. It would therefore seem to have a selective action only for the nerve fillaments presiding over the sensation of pain. As the analgesic action takes place quickly, frequently within two or three minutes after injection, the cocain appears to have a purely local action upon the spinal and basal centers of these fillaments, and, the cocain enters the nerve structures directly, as demonstrated by Lewandawsky's carmine injection, and without passing into the general circulation; hence we get none of the general affects produced by the absorption of cocain. It would appear that its analgesic action here was comparable to that secured upon the iris after the cocain has diffused through the aqueous humor and anesthetized the iris, without affecting its function. The roots of the spinal and basal nerves are bathed in the cerebro-spinal fluid which passes through the lymph channels and around the sheath which covers the nerves, and as the subarachnoid spaces communicate with the ventricles, through the foramina of Magendie, Key and Retzius, to get analgesic action upon the head is simply a matter of using a larger dose and giving sufficient time for the solution to diffuse through the cerebro-spinal fluid to the ventricles.

The operations upon the head done under spinal analgesia which I have to report comprise:

- 2 Simple Mastoid Operations.

1 Stacke Operation.

2 Frontal Sinus Operations.

1 Ossiculectomy.

1 Eneucleation of the Eye.

Mrs. N.——, eighty years of age, operated upon at the California Eye and Ear Hospital. Diagnosis: Phthisis bulbi, from perforating wound. Operation: Eneucleation; 20 minims of a two per cent solution of cocain injected between the third and fourth lumbar vertebra. Analgesia complete to the neck and face in twelve minutes, but the eye was not entirely anesthetized for eighteen minutes. Pulse varied between 70 and 100°; respiration practically normal. The operation was perfectly painless. There was a slight amount of nausea but no vomiting. On the evening of the day of operation the temperature was 102°, and 101° on the day following. The headache began about four hours after the operation and became very severe; was somewhat relieved by an ice bag to the head and almost entirely relieved by one five-grain dose of antikamnia combined with one-half grain caffein. I learned later that the patient had had an attack of fever every week or so lasting two or three days for several months past, so I did not attribute this rise of temperature to the injection.

Mr. W.——, thirty years of age, operated upon at the California Eye and Ear Hospital. Diagnosis: Sub-acute mastoiditis. Simple mastoid operation: 20 minims of two per cent solution injected between the third and fourth lumbar vertebra. Analgesia complete to armpits in fifteen minutes, but it required thirty minutes in this case before the analgesia was sufficient to begin operating on the mastoid. I must say, however, that this patient was an exceedingly nervous one and very apprehensive, and the analgesia may have been complete earlier than thirty minutes. The pulse did not go beyond 100°; respiration remained practically normal. The operation occupied forty minutes; there was a slight amount of nausea and some vomiting eight minutes after injection which lasted four or five minutes. The patient felt well when the operation was finished; said he felt absolutely no pain, only the discomfort of traction by the retractors. Three hours after operation the patient complained bitterly of a very severe headache and back-ache. Somewhat relieved by the application of ice, but relieved entirely by the antikamnia-caffein powder.

Mr. R.——, forty-five years of age, operated upon at the California Eye and Ear Hospital. Diagnosis: Suppurative disease

of the frontal sinus. Operation: Curettement; 20 minims of a two per cent solution of cocain injected. Analgesia complete in twenty-two minutes. Pulse varied between normal and 110°; respiration 20 to 24; a little nausea and slight vomiting. Operation occupied forty minutes with absolutely no pain. Two hours afterward a slight headache relieved at once by one dose of the anti-kamnia-caffein powder.

R. K., fifteen years of age, operated upon at the City and County Hospital. Diagnosis: Old otorrhea and suppurative mastoiditis. A Stacke operation made. Eighteen minims of a 2 per cent solution of cocain injected between the third and fourth lumbar vertebra. Analgesia complete in lower part of body in three minutes. Analgesia of the head complete in 18 minutes. Pulse varied between 118 and 144, respiration between 20 and 28. Operation occupied one hour, with absolutely no pain except when granulations were curetted from external canal and middle ear. As this patient was but fifteen years of age, and cried and complained a great deal when his head was being shaved preparatory for operation, I think he was more alarmed than hurt when the external canal and middle ear were curetted as stated. The recovery in this case was absolutely uneventful; no headache, no rise of temperature.

Mr. M., age forty-three, operated upon at the City and County Hospital. Diagnosis: Empyema of frontal sinus and ethmoid cells. Operation: Curettement. Twenty-three minims of a 2 per cent solution of cocain injected. Complete analgesia in 30 minutes; a little nausea and a little vomiting, which passed off in a few minutes. No pain from the operation except when the angles of the sinus were curetted, then he seemed to suffer a good deal of pain. The sinuses in this case, however, were very anomalous, having tremendous diverticulæ and the external angles following the supra-orbital ridges clear out to the external limit of the eye brows.

W. H. A., age thirty-five, operated upon at the City and County Hospital. Operation: Re-opening of a Stacke wound and curettement of the superior and anterior wall of the mastoid antrum. Twenty minims of a 2 per cent solution of cocain injected. Analgesia complete in 16 minutes. Pulse varied between 70 and 100, respiration between 18 and 26. There was a little nausea and vomiting. Ten minutes after the injection the patient's pulse became very weak and he felt very much depressed; $\frac{1}{20}$ strychnia was given; he recovered readily in a few minutes. The operation

occupied 30 minutes and caused but little pain; none at all after the first 5 or 10 minutes.

R. K., age fifteen, operated upon at the City and County Hospital. Diagnosis: Old otitis, necrosis of the ossicles and granulations in middle ear. Operation: Ossiculectomy and curettement. Twenty minims 2 per cent solution of cocain injected. Slight nausea and vomiting; passed off in 10 minutes and felt well. Analgesia complete in 30 minutes. Patient sat on a chair beside the light so that I used the head mirror and operated with much comfort, having full co-operation of the patient. Operation required 25 minutes. There was no pain except when the ossicles were grasped with forceps. The pain was not severe, however, so the patient stood it very well. Both pulse and respiration remained practically normal. The patient felt very well when the operation was finished. No headache or other post-operative disturbance.

As I have already said, it will, of course, take thousands of cases and a perfected technique to determine the scope of the use of cocain as a general analgesic. Its safety and reliability have been pretty thoroughly demonstrated for operations upon every part of the body except the head, and I believe there are selected cases where it will serve us well in this field. There is certainly far less disturbance after its use than following the administration of general anesthetics. There is but little if any shock, and the patient is usually ready to take his meals regularly very shortly after the operation, which is a great factor in keeping up the strength and nutrition of the patient. Another thing which appeals to me strongly in its favor is the apparent innocuousness of the method and its absolute freedom from contra-indications, having been used successfully in the aged, and those suffering from extensive organic heart and kidney disease; not the least advantage to us is being able to secure the co-operation of our patient, which would be a distinct help in many instances.

135 Geary Street.

CALIFORNIA EYE AND EAR HOSPITAL.

Lumbar puncture cocain.....	.....
No	April..... 1901.
.....	Age
Diagnosis .....	.....
Operation .....	.....
Nausea .....	.....
Emesis .....	.....
Pain .....	.....
Time of injection .....	.....
Amount injected	m. 2% sol.....
Analgesia	in..... minutes.
Pulse	resp
Before injection .....	.....
During operation .....	.....
Operation finished at .....	.....
Remarks.	

A VARIATION IN THE TECHNIQUE OF SEPTUM OPERATIONS.*

BY STEPHEN H. LUTZ, M.D., BROOKLYN, N. Y.

Assistant Surgeon Manhattan Eye and Ear Hospital, New York; Assistant Surgeon Brooklyn Eye and Ear Hospital.

There is no one operation that can be depended upon to correct every deviated septum. Each case has some feature individually its own. As you know, deviations are either cartilaginous, bony or both, depending on whether they are far forward or far back, high or low, being at all places in the partition that divides the two nostrils, the septum.

The instruments used are a compressing or breaking forceps and various forms of knives, gouges, spoke-shaves and Asch's cutting scissors or forceps. Plugs or splints may or may not be used afterwards. These are best made of cork or dentist's sheet rubber or cotton.

My object in bringing this one point before you, is to determine if it is a new departure or if others have done the same thing and not thought it worth reporting. I find nothing in literature regarding it.

To be brief, what I claim is that it is easier to break a septum up thoroughly before cutting than after cutting. I use the Roe or Asch straightening forceps first, with a rocking motion and either of the Asch cutting forceps or both of them if the deflection is in the middle of the cartilaginous portion of the septum, and if the deflection is high up or far forward I use the Douglas knives, and if far back the breaking up process alone is sufficient. All spurs should be carefully removed first by using saw or spoke-shave, preferably under the mucous membrane which can be raised in a flap. It is better, when possible, to do this some days or weeks before the septum itself is to be straightened. If this is not possible it can all be done at the same time or afterwards. After the spurs are removed, I grasp the septum well over the deflected portion and with an extreme rocking motion break it up well. Sometimes this suffices, no cutting having to be done.

If the nose is one that has been broken at some time, as most of these cases are, it is necessary to separate the old fragments at their

* Read before the annual meeting of the American Rhinological, Laryngological and Otological Society, New York, May 23, 1901.

lines of union. For this purpose the Douglas knives are by all means the best. The use of moulded rubber splints or plugs of cotton may or may not be needed. Sometimes they are not needed, but I have used them all for different cases and I prefer the ones made of cork or of dentist's sheet rubber or celluloid, which can be moulded to fit each case. By moulded rubber splints I mean ones made by the operator either just before or during the operation. The process is easy and these splints are much better than any on sale at any instrument makers. Placed in hot water the dentist's rubber used to make plates, is easily moulded to any shape.

The principal point is the fact that the breaking is done first and if then found necessary, any cutting there may be to do can be done. If the septum is well broken, and by that I mean completely movable, but still covered by mucous membrane, which I try to keep as entire as possible, you cannot help but get good results. When the septum is completely broken the resiliency is overcome and will not return nor will the deflection.

598 Madison Street.

PAPILLOMATOUS GROWTHS OF THE SOFT PALATE.*

BY WM. F. DUDLEY, M.D., BROOKLYN, N. Y.

Papillomata occur in the oro-pharynx with greater frequency than any other form of neoplasm. As they are benign in character, and generally of small size, they naturally are regarded as of but little importance, or as capable of causing nothing worse than a troublesome mechanical irritation. In text books they are treated curtly, and rather scant space is devoted to their consideration. So exhaustive a work, as that of Lennox Browne's dismisses the subject by stating that: "These benign neoplasms do not as a rule give rise to much inconvenience; but in several instances which have come under notice, the growths have been attached by a very long pedicle, and have produced violent irritation of the larynx and spasmodic cough."

Papillomata usually appear as small wartlike excrescences, or as pedunculated masses attached to the margin of the faucial pillars, the velum, the uvula, or the tonsils. They are slow of development, usually not painful, and not hemorrhagic in tendency.

Histologically, they consist of an excessive proliferation of epithelial cells, supported by a skeleton of recent connective tissue, that indicates the morphology of the tumor, by its villus protrusions upon the surface, and by its digital intrusions to or below the plane of the surrounding normal tissue from which it springs.

The requisite essentials for a papilloma are: "That the papillæ shall be formed of connective tissue, and that the epithelial layers which cover them shall be disposed, as upon normal papillæ." I venture to ask your consideration of the following report of a case of tumor of the velum, which was papillomatous in character, but was not histologically a typical papilloma. Its physical appearance was quite uncommon. Indeed, I can find but two reports of similar growths. The first given in 1896 by Dr. J. W. Gleitsmann before the American Laryngological Association, under the title of, "A Case of Unusual Laryngeal Growth," with the appended diagnosis of "Papilloma durum, probably malignum, and perhaps carcinomatosum;" and the second case, reported in 1900, before the American Medical Association, by Dr. Joseph S. Gibb, as "An

* Read before the American Laryngological, Rhinological and Otological Society, June 15, 1901.

Unusual Papillomatous Growth in the Larynx." His examining pathologist considered it a benign papilloma, having, however, certain structural arrangement of its cells, suggestive of malignancy.

My patient was a man, seventy-one years of age. He had led a moderate and regular life, and has been remarkably free from any serious illness. When eleven years of age he had acute purulent otitis media on the left side. Since then there has been, with short intermissions, a slight discharge of fetid pus from the ear. The tympanic membrane is now absent, and the sense of hearing is quite lost on that side. At twenty-two years of age he had a slight attack of muscular rheumatism in his lower extremities. Three years ago he had acute cardiac dilatation from severe exertion, but now has fair compensation. For twenty years he has worn false teeth fixed in hard rubber plates, upon both upper and lower jaws. The dental plates were so skillfully fitted that during the following eighteen years he had no need to consult his dentist. He has had two small cystic tumors of the scalp; one ruptured spontaneously and the other was excised.

In boyhood he had numerous "warts" upon his hands. Syphilitic infection is denied. He has used wine temperately, and has smoked cigars since he was sixteen years old. For the past twenty years he has averaged twelve cigars per day. The cigars are mild domestic ones, of medium size; but he is a "hot smoker." that is, he cuts a large piece off the point of the cigar, and smokes it vigorously and continuously. He does not inhale the smoke lower than the oro-pharynx, and does not exhale it through his nose. I detail this because the incoming smoke current constituted, for many years, a considerable irritant to the anterior surface of the soft palate, the hard palate having been protected by the dental plate.

I first saw the patient in November, 1899, and he stated that the tumor had then existed for about two and one-half years. It had caused him but slight discomfort until June, 1899, when deglutition became painful. The dysphagia increased, and so seriously affected his nutrition that in six (6) months his weight decreased from one hundred and seventy-two to one hundred and forty-four pounds. He was quite constantly annoyed by an excess of saliva.

Inspection revealed three growths on the anterior surface of his soft palate. The largest mass was circular in shape, was $\frac{7}{8}$ of an inch in diameter and projected $\frac{3}{16}$ of an inch from the level of the palate. The surface was nearly flat, being rather more prominent toward the center than at the periphery. The marginal tissue

slightly overhung the basic attachment, forming a sulcus $\frac{1}{16}$ of an inch in depth around the entire circumference. The neoplasm was equidistant from the lateral buccal walls. Its anterior edge was $\frac{1}{8}$ of an inch posterior to the hard palate and $\frac{1}{4}$ of an inch back of the rim of the dental plate. The body of the mass was evenly firm to the touch, but the surface was slightly nodular, and looked soft and pulpy. I would make especial mention of the color of the surface, which presented a pearly glistening appearance, white or very light gray-white in hue, shading to a dark gray at the edge. Two smaller tumors existed on the soft palate, each $\frac{1}{4}$ of an inch in diameter. One at the edge of the hard palate, and one at the free border of the velum. Excepting in size, they closely resembled the large parent mass. Post-rhinoscopic examination showed the superior or naso-pharyngeal surface of the velum to be free from any signs of inflammation or of adventitious tissue opposite the bases of the tumors. There was absolutely no zone of acute inflammation surrounding the sides of attachment, although a mild passive congestion was general to the mucous membrane of the pharynx, such as is usual in elderly persons. No glandular enlargement existed.

I removed the two daughter growths by means of a Bosworth snare, and sent the tissue to a pathologist of well recognized ability, for microscopic diagnosis. He promptly reported, "that examination of sections of the material reveals it to be composed of papilloma, underneath which is a very lawless carcinoma, which is evidently in the process of metastasis, as plugs of abortive cells can be seen in the lymphatic spaces. Any operative work must be radical to get beyond the malignant tissue."

Both wounds of operation healed within a week, the new mucous membrane being so normal in appearance that the sides of the cuts could scarcely be distinguished. The following week I called Dr. Jonathan Wright in consultation and snared off a fragment of the large mass, which I gave him for study. It was not a satisfactory sample, being largely surface growth, but the patient would not *then* allow more extensive cutting. The age of the patient, and the macroscopic appearance of the tumor, was thought to indicate possible malignancy. A few weeks later, in December, he had an attack of the epidemic influenza, which then prevailed. He had a pronounced pharyngitis, accompanied by diffuse inflammation of the left faucial tonsil. The tumor of the velum also was involved. It became exquisitely tender and more prominent by about $\frac{1}{8}$ of an inch. The pharyngeal inflammation subsided in a few days,

and the tumor returned to its former condition, excepting some increase in thickness and a greater amount of the white pulpy material upon its surface. The general health of the patient, however, was discouraging in the extreme. Deglutition was so painful that food was refused, except in a very insufficient quantity, and his vitality rapidly decreased. At night he could take only short, restless naps, and was much inconvenienced by the persistent driveling of saliva.

On February 18, 1900, I excised the entire mass, using a cold steel-wire snare, the loop being of No. 3 piano wire. Dr. Jonathan Wright was present and granted me his welcome advice and assistance. I made no effort to go deeply below the surface of the surrounding mucous membrane, as I feared that the snare would pinch up the entire thickness of the velum and make a buttonhole opening through it into the naso-pharynx. As the wire loop was being contracted, the tissue cut very hard, and I had difficulty in exerting enough traction to draw the encircling snare home into the canula. The wound bled freely at first, but this ceased in ten minutes, and not more than an ounce of blood was lost.

There was no secondary hemorrhage. The wound healed within two weeks, leaving a small stellate cicatrix, exactly flush with the surrounding surface. Deglutition was painless from the day of operation. The patient then went south, and in three weeks gained seven pounds in weight. Two months later I examined him, and found the site of operation covered by apparently normal mucous membrane. He claimed to feel perfectly well. The only new development was a small wart-like prominence upon the dorsum of the tongue. It was situated in the median line, about one inch anterior to the circumvallate papillæ, directly under the former site of the parent growth upon the velum. It resembled a pimple about four or five times the size of a pin head. It was not sensitive or characteristic in color, and has in no wise changed up to the present date.

The following is the report of Dr. Wright upon his findings in the large tumor:

"After a careful examination of the microscopical appearances in the growth from the soft palate on February 18th, I am unable to find any positive evidences which I regard as sufficient to establish the diagnosis of malignant disease. Owing to the comparative slowness of growth, lack of circumjacent infiltration and of glandular metastasis, and the non-recurrence of neighboring daughter islands, I see no other conclusion than that the growth is

at present of a benign nature. I am therefore fully in accord with you as to the advisability of its extirpation by such means as his general condition will permit, rather than entertaining the opinion that it should be left alone or the patient subjected to the danger of a radical operation, involving great danger *per se*."

The elapsed time since the operation is now fifteen months. There is no recurrence and no evidence of gland infection. The patient has entire comfort and has gained thirty-two pounds in weight. These facts tend to confirm the diagnosis of benignity and to encourage a favorable prognosis. Furthermore, non-malignancy was indicated by the absence of any zone of inflammation in the soft palate, contiguous to the attachment of the neoplasm, for the mucous membrane there was practically normal. The clinical behavior of the wound after the operation strengthened this conclusion. No attempt was made for free incision under the mass in order to include any deep extension of the new growth. In tumors assuming a malignant type, the base is the first portion to show characteristic tissue changes, and such an operation as I performed would certainly have hastened and increased any existing tendency to carcinoma.

This neoplasm differed from the true papilloma in lacking the significant digital projections of connective tissue toward the surface or into the underlying structure. It consisted rather of an excessive proliferation of epithelial cells, heaped together in a lawless manner upon the surface, and probably it dipped but slightly, if at all, below the normal face of the soft palate.

Under the microscope the question of malignancy in its initial stage must be determined mainly by the new cell growth in the lymph spaces in the sub-basilar region. In this specimen the cell production was so rapid that there was a dropping of cells into the lymph spaces, but they were dead cells, simply the result of desquamation, and the second microscopic test could discover no evidence of cell multiplication within the lymphatics. The reduplication of cells in the lymph spaces is necessary to identify the malignant neoplasm, but at times it is difficult to obtain this testimony with positiveness, and both the pathologists consulted by Dr. Gleitsmann and by Dr. Gibb protected themselves in their reports by admitting the possible malignancy of the growths submitted to them for judgment.

32 Livingston Street.

TRAUMATIC DISLOCATION OF THE LEFT ARYCARILAGE.*

BY HENRY L. WAGNER, M.D., PH.D., SAN FRANCISCO.

A traumatic dislocation of an arycartilage is extremely rare. The only reference in literature to such that I have been able to find is the case reported by Hopmann, "Heymann's Handb. d. Laryngologie," where a dislocation of the right arycartilage with a dilaceration of the right vocal cord was observed. The following is, in brief, the history of a case of simple dislocation which came under our observation in the San Francisco Polyclinic:

An elderly man, seventy-two years old, was struck by a drunken soldier—the blow landing on the throat. The victim fell to the ground unconscious, where he lay for some time, until he was picked up by friends. On regaining consciousness he found that he was unable to speak; his breathing was difficult and he experienced an intense pain in the region of the neck where he had been struck.

The next day he sought advice at our clinic, when the following conditions were found to exist: No marked swelling externally, but within the larynx, especially in the region of the arycartilages and the false and true vocal cords, the swelling was so great that the contour of the different parts of the larynx could scarcely be traced. On the left side a slight crepitation could be felt, though no abnormal mobility of any part of the larynx could be perceived. The patient complained of dyspnea and of a great deal of pain when swallowing. On the other hand, there was no bloody expectoration. The voice, however, was hoarse and the articulation so muffled that his utterance was scarcely intelligible. An ice-compress externally and a laryngeal alkali spray was successfully used. A few days later the swollen condition of the larynx had materially subsided. Neither fracture nor infraction could be observed and the crepitation had disappeared entirely. We were now able to perceive that the left arycartilage was somewhat dislocated and thrown to the front of its normal position and fixed between the respiration and phonation line of the vocal cord. There was still a good deal of pain, though the dyspnea was considerably lessened—the voice continuing husky. This condition lasted for a number of weeks until it had, under massage treatment, nearly disappeared. At this stage the patient ceased his visits and further observation was prevented.

It is remarkable in this case, that no fraction or infraction of the laryngeal cartilages took place, for at the patient's time of life these cartilages generally become more or less ossified, and that the trauma resulted only in a dislocation of the left arycartilage from its cricoid-joint.

* Presented at the seventh annual meeting of the American Laryngological, Rhinological and Otological Society, New York, May 23, 1901.

IMPROVED PORTABLE APPARATUS FOR HEATING AND STERILIZING COMPRESSED AIR.

BY CHARLES L. ENSLEE, M.D., CHICAGO.

Formerly Surgeon to Illinois Charitable Eye and Ear Infirmary and Professor of Otology, Rhinology and Laryngology, Chicago Eye, Ear, Nose and Throat College; Clinical Instructor in Diseases of the Ear, Nose and Throat, Illinois Medical College.

IN THE LARYNGOSCOPE of November, 1898, I published an article describing an apparatus for heating and sterilizing compressed air. The instrument was designed for office and hospital use. It

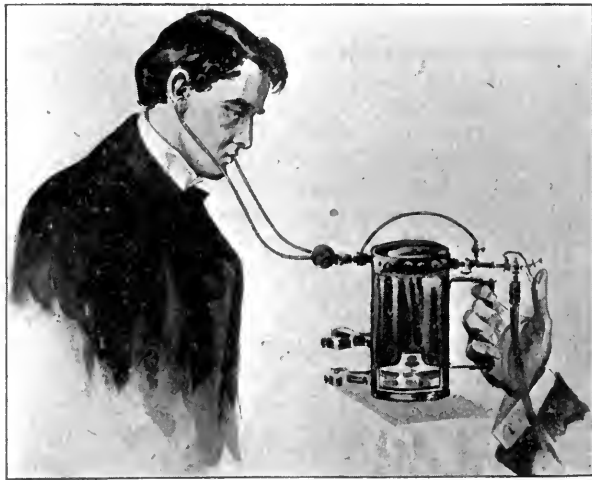


Figure 1. Showing position of patient and instrument in the treatment of deafness.

is a stationary apparatus, too heavy to carry about and rather expensive to operate. Since then I have devised a similar apparatus, which is light and portable. It can be brought near to the patient; it is intended to take the place of the former, is much less expensive and can be used with the Davidson spray bottle, pneumatic dilator or any oil nebulizer.

During my nine years' service at the Illinois Charitable Eye and Ear Infirmary and the Chicago Eye, Ear, Nose and Throat Col-



Figure 2. Showing patient under treatment for catarrhal affections and tuberculosis.

lege, I have used compressed air in every conceivable form and found it to be harmful to the middle ear and respiratory passages



Figure 3. Forcing the hot compressed air through the Eustachian tube into the middle ear for tinnitus aurium and otitis media chronica.

in many cases, unless first heated and sterilized. The hot medicated air is carried deeply into the tissues, destroys micro-organisms and restores the organs more nearly to their normal state.

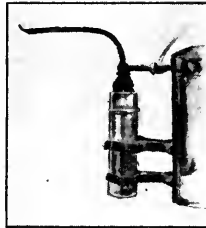


Figure 4. Davidson spray bottle attached to heater for spraying warm oil in the treatment of catarrh.

In the treatment of pulmonary phthisis and tinnitus aurium I have had most satisfactory results. Consumptives gain very rapidly under this treatment.

DESCRIPTION OF APPARATUS.

It is simple in construction, shaped like an ordinary steam atomizer. The body consists of a cylinder three inches wide by six inches high, lined with asbestos and partially filled with seam-



Figure 5. Pneumatic dilator attached to heater which carries the hot sterilized air into the middle ear and lungs.

less copper tubing, coiled and shaped like a cone with the apex directed downward. Under the tubing is placed an alcohol lamp for heating and sterilizing the air as it passes through the hot coils. The degree of heat and the force are regulated by a system of valves.

For further particulars the reader is referred to the former article.

100 State Street.

SOCIETY PROCEEDINGS.

WESTERN OPHTHALMOLOGIC AND OTO-LARYNGOLOGIC ASSOCIATION.

(Proceedings continued from page 455.)

Treatment of Antrum of Highmore Through Natural Opening.

By DR. NORVAL H. PIERCE. This paper will appear in full in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. GARLICK: I congratulate Dr. Pierce on the ease with which he is able to find this opening. I have examined a great number, both dead and alive, and my experience, even on the cadaver, is that the opening in the majority seems to point backward and upward, and one can easily see the difficulty of entering such an opening from the anterior part of the nose; and as these cases are usually attended with pathological changes, such as growths around the ostium, the difficulty is still further increased. In studying authorities on this subject, Zuckerkandl and others claim it is impossible to enter the natural opening, the wall there being so thin that many who believe they get through the ostium in reality break through the wall. There is hardly a case in my dispensary practice that I do not try to get into this opening, and very few, less than thirty per cent, I can even find, much less enter, though I am sure, when possible, much good can be done to relieve, if not clear up all symptoms.

DR. IGLAUER: I simply wish to voice what has been said. From specimens which I saw in Vienna it seemed a difficult thing on some occasions to pass the probe, even with the head in your hand; and in Hajek's clinic, it was the rule not to waste much time trying to sound the natural orifice, but to force the exploring needle through, under the inferior turbinated bone. In that way you can enter the cavity with ease, and you are sure you are in it. In the other way you are never certain, and when you wash out the nose, you are not sure whether you are washing secretions out of the nose, or the fossa. I should like to ask Dr. Pierce in what per cent of cases he was able to enter the antrum through the natural opening.

DR. BECK: I was surprised at the previous speaker, I being present at the clinic at the time he was. I worked in this clinic and I say it is true, they do not waste time in getting into the antrum, but simply go with the trocar in the inferior meatus. That does not say it is not worth while trying to get through the natural opening, and I know that in the private institution of Hajek in Vienna, the passing of the canula or even the small nasal catheter, is practiced, and they do wash them out and are certain they are washing out the sinus. It is difficult, but that does not say anything against the method. Where there is a good deal of swelling there must be almost a closure, and while cocaine may shrink the tissues, they do not have so much contractility, as these tissues are not like those around the inferior turbinated body.

DR. PYNCHON: Did you say anything as to the position of the head in this operation? I suppose it is tipped over to the side.

DR. PIERCE: No, the head is held erect. If not, you end by leaving some of the fluid and you have to force the water out.

DR. KNAPP (Vincennes): The preceeding gentleman voices my experience to a certain extent in entering through the natural opening. After working in Fränkel's clinic and the cases I had the pleasure of seeing there, I felt that I was ready to go out and enter any antrum of Highmore that might be presented to me for treatment. But after attending a course of lectures by Hajek and seeing a number of wet specimens, I soon found it was a physical impossibility. To say nothing of pathological conditions, take the normal nasal cavities and in the majority of cases, I find it is a physical impossibility to enter the natural opening with an instrument, and the wet specimens I had the privilege of examining—a great many in number—even those I failed to enter, and it would be much more difficult in pathological conditions, and we know by experience that there is no definite guide by which we may be governed in opening or entering that sinus. There are no two nasal cavities I can remember exactly alike. I have seen and entered the sinus by its natural opening, but in very few cases have I succeeded, and I have in one case failed by going through the canine fossa to enter the sinus. I can show a specimen where it was so far to the temporal side that it could not be entered by the canine fossa.

DR. PIERCE (in closing): I can only say that I wash out the maxillary antrum very frequently through the natural opening. I cannot give the percentage of cases in which I have found the opening, but I should say I can get the tube in as many times as

I fail. This is proven by the flouroscope. We can see the tube passing through the osteum into the antrum. Schmidt uses the flouroscope altogether when first finding the opening. Hartman, Moritz, Schmidt and a good many others recommend this method very highly and I still insist upon it that when antral disease is suspected we should first seek for a natural opening. The gentlemen who regard its performance with such incredulity have not perhaps had sufficient experience.

Some of the Bacteria Found in the Nose. DR. S. IGLAUER, Cincinnati. This paper will appear in full in a subsequent issue of THE LARYNGOSCOPE.

DISCUSSION.

DR. STEIN: I cannot see how one can decide such important questions by taking secretions from cadavers, even if shortly after death. We have putrefactive changes in every tissue after death, without a doubt, and such a statement is not tenable, even if the experiments were made only a short while after.

DR. GOLDSTEIN: I should like to say that if the conclusion reached by Dr. Iglauer is universally accepted, viz., that the epithelium of the nasal cavity, and not the mucous, has the element of maintaining the healthy condition of the cavity, I wish to substantiate the observation in my own paper, that the destruction of a large amount of intra-nasal tissue is not an advisable thing to do.

DR. IGLAUER (closing discussion): In reply to Dr. Stein, I will say that I did not state that the conclusions were reached solely upon the work which I did upon the cadaver. For that reason it was necessary for me to go through the literature, and I only reached the conclusion after weighing the evidence on both sides. The preponderance of evidence shows the presence of bacteria in the healthy nose. It is true that in animals killed and examined immediately after death, in a considerable percentage of cases, no cultures were found, but in the majority of such cases the cultures were found. The majority of persons who have examined the nose of the healthy human beings have been able to extract micro-organisms, and the only objection is that the bacteria might have come from the vestibule where they had accumulated. As to the germs developing immediately after death, I think that is a mistake. It has been demonstrated in cadavers that it takes from sixteen to twenty hours for microbes to appear in the blood if the body be kept at the room temperature, but if the body be placed in an incubator you can develop them five to six hours after death. Further, if Dr. Stein's

arguments were correct, Fränkel, who examined the antrum in cadavers, would not have found any antra sterile, but, as a matter of fact, in thirteen cases he found no bacteria, showing that none had developed up to the time of examination.

As far as the President's remarks are concerned, I do not wish him to believe that the idea of the protective action of the ciliated epithelium is my own, since the theory has been suggested by several observers, and I so note in my paper, but I do believe that is the all important factor in the subject. In the literature which I consulted, I do not find the theory advanced that many bacteria inspired with the air reach the naso-pharynx, whence they may be swallowed and digested.

Differential Diagnosis of Affections of the Eustachian Tube, and Spongifying of the Labyrinth. DR. J. HOLINGER (Chicago).

This paper will appear in full in a subsequent issue of THE LARYNGOSCOPE.

DR. STEIN: I have not very much to say in regard to the subject, and there is no question about this being new and intensely interesting that we know very little about it, and therefore I do not feel equal to discuss the paper to any extent. We are limited in our discussion to the disease and the condition of spongification. I think that the greatest difficulty that would be met with, and that I have found since I have undertaken to use the methods in my limited way and with the limited instruments that I have, would be found in the same complaint that arose a few moments ago by a question from one of the members, and shown by the patient, and which I have found repeatedly is the complaint of the patient, that is the tinnitus. The noises heard by the patients were so marked that the diminishing sounds were overcome and definite conclusions could not be reached. We are at a loss whether they hear the sound or not. As the patient says, "It is just the same as the noises in my head," and he cannot tell just when the change occurs. I want to refer to the second case Dr. Holinger quotes in his paper, showing the fifty per cent improvement after inflation. Those cases show the difficulties of arriving at a definite diagnosis. When the doctor looked at the case examined before us and upon inspection of the drum head, he said, "There is no use going further; very likely this is a tubal disease from the appearance of the drum-head." That is a very differential point in the diagnosis, *i. e.*, the appearance of the drum-head. A drum membrane that is thickened or shows a disturbance in its ossicular chain and is retracted suggests tubal or

middle-ear disease, a condition which is not present in spongification *per se*. But almost every one has some changes of the mucous membrane lining the tube or middle ear, not necessarily showing on examination of the drum, so that it is almost impossible to say that the patient never had a middle-ear disease. Even the history of the patient is not to be relied upon much. The two diseases therefore occurring together might, and most likely would be misleading. The disease spongification of the labyrinth is certainly a very unique one and one we have not recognized until of late years. We are getting so we do recognize and appreciate that there is such a thing, and it will help us in our prognosis and in our statement to the patient, but the possibility of disease of the middle ear always stands out before us and bothers us a good deal. I do not like to go into etiology, because I do not consider myself competent. There is a condition of exostosis or hyperostosis of the middle ear which is very similar to this. In spongification it is not definitely decided whether the changes which occur are due to mechanical interference with the movement of the stapes and the crowding out of the foot-plate from the window, or whether there are physical and chemical changes in the lymph circulating in the canal. That has been brought up and disputed. Now the condition of exostosis or hyperostosis occurring in any portion of the middle ear has been recognized as this disease. These outgrowths have been seen in the middle labyrinthian wall. The etiology of some of these cases, where other portions of the middle ear are involved, has been recognized as of syphilitic origin and the lesion pronounced as syphilitic nodes. They have been practically cured by the anti-syphilitic treatment and therefore this fact has to be taken into consideration in the treatment of this condition of spongification. I simply bring this in as a point to be considered in the diagnosis. In the treatment of these cases of spongification mercury and iodide of potassium are used.

DR. DUDLEY S. REYNOLDS (Louisville): The important part of the test upon which we are told we must rely, is the mental state of the patient. No test has fixed value, in my mind, which depends upon subjective phenomena, or subjective recognition. The same person in different states of mind will not answer in the same manner to the same tests, at different times. The tuning fork is one of the misleading instruments of diagnosis, and I think has very little value. It is like the watch test, which has been almost entirely abandoned. I have examined a great many pensioners seeking increase; and I find it is one of the most difficult problems to determine the degree of deafness in such cases.

I find myself unable to respond to the same tests on different days, and at different times. If I have just had something to eat my hearing is not so acute. I do not hear the watch or the fork so far away, or for the same length of time as when all my perceptions are sharpened by an empty stomach.

These matters must be taken into consideration when it comes to making differential diagnoses, between ankylosis, the spongification of bone, and neoplasms in the tympanic cavity.

DR. BROWN (Columbus): I understood Dr. Holinger to say that aside from the findings on catheterization of the tube, the fork tests in this case pointed to spongifying of the capsule. In the later fork test I understood that he attributed the change in the lower tone limit to the fact that the test was made too long after the catheterization, the effects of which had passed away. Now, after this fork test, the voice test continued to show the same improvement in hearing as was noticed immediately after catheterization. I would like to ask the doctor whether this is a pure case or a mixed case, and if we have mixed cases, how by this test we are to determine the limits of each.

DR. BALLENGER: Dr. Reynolds has stated that the tests vary from time to time, and we therefore are beset with certain troubles which render them of comparatively less value. This is a point that is much magnified and overrated, in my estimation. It is true that every day, and from time to time, we get varying results. For instance, in the Rinné we may get a plus 10 one day and a plus 15 the next, or minus 10 and minus 15, and it will vary in that way, a few seconds, but the important fact to be noted is that it is *plus* or *minus*, not that it is plus or minus 10 or 15. I do not believe the Rinné is of special value except in pronounced cases of deafness. The Weber test is of value only when there is pronounced deafness of one ear. If both ears are affected the Weber test should not be taken as of any special significance in the diagnosis of the case. It is just as important for the otologist to master the exceptions to the functional tests as it is to master the rules. The exceptions are well known and clearly defined and without a complete mastery of them the use of the tests would be of but little value as aids in diagnosis and prognosis. Having mastered the tests and the exceptions the otologist is prepared in a large number of diseases of the middle ear, Eustachian tube and labyrinth to make a differential diagnosis as to the pathology and the location of the lesion. For instance, Dr. Holinger has shown us that by the use of the

forks and other means of diagnosis we can locate the condition known as spongification or what I think is more correctly called "rarefying osteitis," which occurs in the bony capsule of the labyrinth, and more especially in that portion of it near the oval window. I use the fork tests with equal satisfaction in many other diseases of the conduction and perception apparatus, and believe their use should form a part of the routine practice of every otologist. There are three cardinal signs of "spongifying" or "rarefying otitis" of the bony capsule, which are: First, the minus Rinne; second, increase of bone conduction for fork A, and third, loss of hearing for the lower sound limit. These are all signs of middle ear disease, but in an uncomplicated case of spongifying there are no other evidences of middle ear disease; the drum membrane is normal in appearance—not retracted—nor is the handle of the malleus rotated upon its axis. There are no signs of tubal disease nor any other type of middle ear disease so far as objective examination shows; hence when we find these three cardinal symptoms standing alone with no other evidence of middle ear disease, we may feel pretty sure that we have a case of spongifying to deal with. When spongification is complicated with middle ear disease a diagnosis can only be made after treating the case for the middle ear trouble and removing it as far as possible, thus leaving the case clear for a more definite diagnosis as to presence or absence of spongification.

DR. ANDREWS: I have made some experiments in this line and believe there is a great deal yet to be developed. There are three or four tests which point towards spongifying and a number towards tubal disease.

DR. VAIL: I wish only to call attention to the fact that when a patient who is very hard of hearing is being tested for bone conduction he is apt to mistake the *feeling of the vibrations* of the tuning-fork for the tone, and we must keep that in mind and be sure he gets the tone. Another thing is that we have to rely entirely on the statement of the patient, and, of course, we all know what an uncertain quantity that is. Another point is that if we hold the fork on a vertical plane with the ear in making tests for air conduction, we can hear it plainly, or even edgewise we may hear it plainly, but if we hold it with either of four angles, or the edges next to the auditory canal, the fork is silent. The sound waves from the face of the vibrating-forks neutralize those from its sides and at the places of meeting, the angles, silence is the result.

DR. STEVENSON (Richmond): I have made a great many tests with these forks and find the trouble is it needs a great

deal of time, and tests ought to be often repeated. The patients are affected a good deal by outside sounds, and if we could have a silent room in which to test them, especially in the large cities, I think we could have better results. I noticed the doctor, in making the tests, spoke in a little louder voice the second time. The heavy fork is unreliable. The patient is unable to distinguish whether it is tinnitus or vibration of the fork. I would like to ask if it is not often true that these two diseases are confounded. We must remember that the middle ear is not larger than a bean and the capsule not larger than a pea, and with such a delicate apparatus we must have local diseases which give confusing results. I hope the day will come when we will have something better than the tuning-fork. I carried on a like series of experiments with myself, and found it hard to get the same results on different days.

DR. J. O. STILLSON (Indianapolis): I would like very much if Dr. Holinger would inform us if these tuning-forks are of any value in testing malingers. Of course, we have a lot of experience in testing them, and it seems to me it will be a great benefit if 'by means of the tuning-fork we can ascertain positively whether the patient hears or not.

DR. C. W. DODD (Cincinnati): We all know what disadvantages there are connected with the use of the tuning-fork. I have for several years past largely done away with the tuning-fork for testing hearing by air conduction, and in its place substituted a method of my own conception, which has the merit of simplicity with efficiency. It is always instantly ready at hand for use, can be used on both sides of the head at the same moment or in rapid alternation and it is under the finest control; intensity can be instantly varied or the sound completely stopped, and all this without the patient witnessing any manipulations on the part of the examiner. The method is simply the vibration click produced by rapid snapping of the nails of the thumb and third finger; the end of the finger is firmly pressed against the thumb for support, and then perfect control is had over the click of the nails. By this nail-click test we *know* when sound is being produced, even when so feeble that the examiner cannot hear it when at arm's length from his own ears; whereas with the fork, the examiner does not know just the moment the sound ceases unless he keeps his own ear close to the fork. I have specified the use of the third finger; this is, of course, a mere matter of individual choice; others might find the middle finger more serviceable. The first, or index finger, is not so efficient, because, being next to the thumb, its nail cannot be brought into such perfect con-

tact with the thumb nail as can the nail of the middle, or, still better, the third finger.

I can promise, from personal experience with this test, now for several years, great satisfaction with its use; of course, I fully recognize that the fork furnishes certain test features that are entirely wanting in my other method, nevertheless the finger test will be found all sufficient in a large percentage of our hearing tests.

DR. HOLMES: Siebenmann, Hartmann, Bezold and others have written upon this subject in a masterly manner. Just what percentage belong to the class of cases in which we have the increased bony formation independent of catarrhal trouble springing from the pharynx and nose, I believe is an unsettled question. The subject is so far in the process of development, and I think we should all feel it incumbent upon us to enter upon the study of it with interest, and a determination to master it thoroughly.

DR. HOLINGER (closing discussion): These tests have been made for ten or fifteen years. I have made them regularly, while assistant of Siebenmann. The post mortems show the accuracy of the diagnosis; therefore these facts are here to stay, and that all is a young and short-lived speculation or scheme is a mistake. The technique of the whole examination is not simple but difficult. But technical difficulties must be overcome. It took me two months to become accustomed to it. You cannot expect therefore that I can show you all in a half hour or an hour. I hope I will get the material of the Illinois Ear Infirmary and then I will have sufficient material to demonstrate these tests. The more you get used to them the better you will think of them. The whole thing, I admit, may seem to you a little nebulous. You will think different after a while. Was it not the same thing with the examination of the fundus of the eye? I am not doing that work now, but I remember when I began to use the ophthalmoscope as a student everything seemed indistinct. You know how clearly a man learns to see the fundus later on. The same here. In answer to Dr. Brown, I say combinations are possible. Spongifying of the labyrinth I am able to diagnose when I have cured the affection of the tube. That is to say, when there is a normal drum membrane and the air enters the middle ear through the catheter in a normal way. If then the condition persists, the rest of the deafness is due to spongifying. I do not know whether this patient will be restored positively to normal hearing with treatment; I can only say he will be improved greatly and afterwards when those other conditions are cured then we make another

test and will find what of deafness and other symptoms is left. There have been a number of post-mortems, and in none of the cases where the diagnosis was made in the living was the finding found to be opposite. Much remains to be done. Tinnitus, is not characteristic of any disease of the ear. It occurs in spongifying as well as in affections of the tube. The interference of tinnitus with this test is not very important. Dr. Vail said we had to rely too much upon the patient. The fact is that if you make three or five Rinné tests in succession you will find that the tests do not vary two or three seconds one from the other. A malingerer could not deceive you so accurately. You can catch pretenders indirectly. You can show that a man has not got a definite disease. As to the time for these tests, I am able to make the whole test in twenty minutes and I think we ought to be able to give a patient that much time. If a doctor has so many patients that he cannot give twenty minutes for a first examination he may give some to the next fellow who needs them. As to the mental state of the patient, I think Dr. Ballenger answered that. It is not so important. The mental state is not sufficient to change these tests.

(To be continued.)

LARYNGOLOGICAL SOCIETY OF LONDON.

SIXTY-SEVENTH ORDINARY MEETING, JUNE 7, 1901.

E. CRESSWELL BABER, M.B., President, in the Chair.

The following cases, specimens and instruments were shown:

Case of Ulceration of the Larynx (Tuberculous ?) in a Male æt. Forty-eight.

Shown by DR. DE HAVILLAND HALL. The patient was first seen on April 30, 1901, when he complained of hoarseness. No history of any venereal disease can be obtained. The patient lost his voice twelve months ago, but he had no treatment until last April. He has had a cough and some expectoration, but no hemoptysis. He has lost weight. There has been thickening and ulceration of both vocal cords and interarytenoid commissure. There has also been some ulceration on the laryngeal aspect of the epiglottis. There are physical signs of consolidation with râles at both apices, and a few tubercle bacilli have been found in the sputum.

Under the injunction of blue ointment and the administration of potassium iodide—twenty grains three times a day—there has been considerable subjective improvement, but very little objective alteration in the larynx.

DR. STCLAIR THOMSON was of opinion, from an inspection only of the larynx, that it was a case of tuberculous ulceration in a syphilitic subject, who had probably had pachydermia, and had now contracted tuberculosis of the larynx.

DR. DE HAVILLAND HALL said this was precisely the view he took of the case when it was in hospital, though he was unable to obtain any history of syphilis.

Case of Malignant Laryngeal Growth in a Man æt. Fifty-two.

Shown by DR. STCLAIR THOMSON. This patient complains of hoarseness coming on slowly for the last two and a half months. He attributes it to repeated colds since January, so that we may take it that the laryngeal affection dates from at least five months ago.

His voice is now reduced to a hoarse whisper. The anterior four-fifths of the right cord is occupied by an oblong growth with an irregular mammillated surface; the tips of some of these excrescences present the white snow-like surface which has been referred to at previous meetings of the Society in connection with the question of malignant disease. The anterior third of the left cord is also

infiltrated, and shows one or two of these white-tipped mammille. The posterior part of the same cord appears as if indented by the larger growth on the right cord. Both cords move, but while the left moves freely, the right is decidedly limited in its excursions.

There is nothing in the patient's history to arouse a suspicion of lues. He has no cough, expectoration, or hemoptysis. The temperature is normal, the pulse is not hurried, and the chest sounds are normal. He has taken 5 grains of iodide of potassium with some liquor hydrargyri perchloridi since May 25th without any apparent effect.

MR. SPENCER thought it was malignant and now bilateral owing to infection from the opposite side. In his opinion it required early and extensive operation.

MR. WAGGETT asked Dr. StClair Thomson if he had contemplated performing thyrotomy, and if so, would he bring the case before Society when he had done so. He presumed thyrotomy should be undertaken as an exploratory measure.

DR. STCLAIR THOMSON said he thought of performing a thyrotomy, and he wished to know whether members present thought the diagnosis could be positively made without recourse to the excision of a piece of the growth. He himself thought removal of a portion was unnecessary, for if the examination was negative it would not alter their present opinion. Before proceeding to a thyrotomy he should like to know how freely one might remove the parts when both cords were affected? Of course, one might scoop out very freely the whole of one side of the interior of the larynx. Could one be as free on the other side without fear of stenosis? He had had one case in which the whole of one of the cords right up to the arytenoid was removed, and the anterior fourth of the opposite cord as well, but in the present case it seemed to him that not only the whole cord originally affected, but two-thirds of the opposite cord required removal; if at the exploratory operation he found this was so, would it be safe to carry it out?

SIR FELIX SEMON said that he had several times found it necessary to excise both vocal cords, and that no subsequent stenosis had resulted. He did not think that such an event was to be feared. He quite agreed with Mr. Spencer that in all probability there was secondary disease of the left vocal cord, owing to auto-infection. Probably, however, it would be found sufficient to simply excise the left vocal cord, if this suspicion should turn out to be justified, with curved scissors.

A Case of Frontal-Sinus Suppuration Fourteen Months After External Operation.

Shown by DR. STCLAIR THOMSON, and

Three Cases Demonstrating the Results of External Operation on the Frontal Sinus.

Shown by DR. HERBERT TILLEY.

DR. THOMSON'S CASE.—This case was shown to illustrate the completeness and permanence of the cure of nasal suppuration, due to frontal sinusitis, and also to demonstrate that the external scar was trifling and had not increased with time.

The ordinary external operation was performed on April 10th, 1900. A photograph was shown of the scar three months later, and by comparison with the patient's actual condition, it would be seen that this had not increased.

The patient still has suppuration in the antrum, which is drained through a tooth socket. She had, however, been instructed not to syringe this out for forty-eight hours, and as she had not had occasion to wash her nose out since the date of operation on the frontal sinus it would be allowed that the freedom of the nose from all trace of pus was both genuine and complete. She now never requires more than one handkerchief a day, and states, that were it not for esthetic reasons, two a week would suffice.

DR. HERBERT TILLEY'S CASES.—These cases were shown to demonstrate that if the radical operation was effectually carried out, there was no reason why a recurrence of the discharge should take place with lapse of time, as he understood Dr. McBride to have suggested at one of the recent meetings of the Society, and that there was nothing terrible about the operation. These cases had been operated on fourteen months, nine months, and six months ago respectively, and there was still no trace of purulent discharge into the nostrils. Two of the cases also illustrated how slight a deformity is caused by a somewhat radical operation.

DR. VINRACE confessed to having used the word *terrible* in connection with these operations, as he considered them both formidable and of a serious nature. He laid stress on the importance of freeing the inferior meatus or breathing channel of the nose from all obstruction, and of giving that a fair trial before proceeding to the radical operation. He gathered from the patients that this had not been done in the cases before them. He also considered that it seemed more rational to enlarge *per nares* the natural communication between the frontal sinus and the nose, namely, the infundibulum, then perform an external operation.

DR. FITZGERALD POWELL asked the exhibitors to give the Society some detailed information as to the methods adopted in the operative treatment of these cases. He would like to know, firstly, what amount of bone was removed—whether the whole of the anterior wall of the sinus or only a portion of it. Also, if the opening from

the nose to the sinus was enlarged and kept open by a tube, either solid or hollow, for purposes of drainage; and, secondly, as to the method of packing and general treatment. They seemed to him to be very excellent results, upon which the operators should be congratulated.

MR. SPENCER asked Dr. Tilley to give some information with regard to the comparative frequency of unilateral and bilateral affection of the frontal sinuses. Dr. Tilley seemed to meet with unilateral cases chiefly. Was it that these cases were more frequent? At one time very nearly fifty per cent of cases of frontal-sinus empyema were found to be bilateral, but he had noticed Dr. Tilley showed fewer bilateral than unilateral cases. Was this due to the fact that by doing the radical operation on one side early he prevented the empyema from becoming bilateral?

DR. MCKENZIE JOHNSTON said that, generally speaking, he thought the antrum of Highmore a much simpler thing to treat than a frontal sinus. In several of these cases, however, the antrum had been opened, and from the fact of the patients still wearing a tube, he presumed that in these cases, as far as the antrum was concerned, the termination of the case was not yet reached. He would like to know when it was proposed to remove the tubes, and whether the "cure" was considered complete before the antrum was in a satisfactory condition.

DR. FURNESS POTTER asked Dr. Tilley what symptoms he considered necessitated the operation. Would he do the operation in every case in which he had reason to suppose that pus came from the frontal sinuses?

DR. PEGLER said it was just worth remarking with regard to Mr. Vinrace's remarks that there was much difference of opinion as to which really was the "breathing channel" of the nose.

THE PRESIDENT said the main point of interest was what should be the exact radical operation undertaken. The treatment should be as short as possible, and leave as little scar as possible. On these two points the Society would be glad to hear the remarks of Dr. StClair Thomson and Dr. Tilley. He thought it was clearly settled, as had been mentioned by Dr. Tilley, that before operating on the frontal sinus it should, if possible, be washed out from the nasal cavity. It was usually also necessary to first remove the anterior end of the middle turbinated body.

DR. STCLAIR THOMSON said that, with regard to the severity of the operation, the temperature chart showed this not to be the case. His patient was out of bed on the fourth day after the operation, and on the seventh was up for the whole day, and in about a fortnight left the hospital. So at any rate it was not such a "terrible" operation as regards the time the patient had to remain in bed. This woman had the operation done because the discharge was such that she averaged six to eight handkerchiefs a day, and sometimes in the twenty-four hours she might require eighteen. The symptoms were pain over the left eye and neuralgia. She had had discharge for ten months. The disease was evidently brought to a head by an attack

of influenza, which made her frontal-sinus condition much worse. There was plenty of room in her nose to admit of proper breathing when it was not obstructed by pus. When the frontal sinus was opened it was found full of pus and entirely lined with degenerated polypoid mucous membrane. The anterior end of the middle turbinate was removed sixteen days before the operation, which evidently had given sufficient room for drainage, since for some two months after the operation the patient was able to blow air from the hole in the forehead. Even now, if one put the hand on the forehead when the patient distended her nose, one could feel the scar bulge. Several members had noticed this. With reference to the suggestion of treating the frontal sinuses from within the nose, the matter had been considered by the Society on a previous occasion. In this patient, knowing that unsatisfactory results had been obtained, and that fatal cases had been put on record, he determined to keep the wound open for a long time. He operated on April 10th, and did not allow it to close till June 30th. This was one of the factors in the treatment of his case. Another was that he cleared out the fronto-nasal duct, but left no drain into the nose. His patient had, as Dr. Johnston mentioned, still empyema of the antrum. He had thought it might simply be a reservoir for the frontal sinus, and so he left it alone, hoping it would spontaneously heal when it ceased to be filled from above. But the antrum was still secreting pus, though in very small amount. At some future time he intended operating on the maxillary sinus.

DR. TILLEY, in answer to Dr. Vinrace, observed that removal of nasal polypi was a purely temporary measure, and did not relieve the headaches for which the operation had been performed in the cases exhibited. One of his patients had been having his polypi periodically removed for seventeen years at different hospitals. He also pointed out that other questions raised by Dr. Vinrace and Dr. Potter would be found answered in the Proceedings of the Society for February, 1901, p. 78. In reply to Mr. Spencer, Dr. Tilley said that in twenty-three cases of frontal-sinus empyema with which he had had to deal, ten cases had been bilateral.

Two Cases of Thyrotomy for Malignant Disease of Vocal Cords.

Shown by DR. HERBERT TILLEY. In these two cases the operation had been performed five and three and a half years ago respectively. The patients had enjoyed perfect health since, and in the second case the voice was quite good. In the first case the left vocal cord and arytenoid cartilage had been removed, and a few weeks after the operation a large granulation appeared in the anterior commissure, which was still present in a cicatrized form. Had this not been carefully watched it might have been regarded as a recurrence. Sir Felix Semon had confirmed the opinion of the nature of the case before it was operated on. Full details of both cases may be found in the *British Medical Journal*, October 22, 1898.

Case of Infiltration on Left Cord in a Man æt. Twenty-Eight.

Shown by DR. FURNISS POTTER. This patient, a railway porter, whose duties entailed very considerable use of the voice, had recently come under observation complaining of huskiness and a feeling of irritation in the throat, which had troubled him for the last six months.

On examination the uvula appeared to be somewhat elongated, and the left cord was seen to be reddened and infiltrated in its whole length, and it presented an uneven granular appearance. The arytenoid region was unduly red, but otherwise the larynx was in normal condition.

The chest had been carefully examined, but no sign of pulmonary mischief nor history of syphilis, and the family history was free from evidence of tuberculous taint.

THE PRESIDENT thought the case might be tubercular, but he understood there was no evidence of tubercle in the lungs. There was no want of movement of the cords.

DR. FURNISS POTTER thought it was tubercular.

Specimen from a Case of Sarcoma of the Tonsil, with Microscopic Slide.

Shown by DR. MCKENZIE JOHNSTON (Edinburgh). L., male, æt. twenty-eight years, a farm servant from Shetland, was sent to me at the Royal Infirmary about the beginning of December, 1900, on account of a tumor in his throat. He stated that he had only been aware of its presence for about six weeks, but on inquiry it was found that his friends had noticed for about three months that his speech was thicker than usual. He had no pain or discomfort, and had nothing to complain of except the fact that he felt a lump in his throat, although, latterly, he noticed that when swallowing liquids they were occasionally regurgitated through the nose.

On inspecting the throat, the left tonsil was seen to be enormously enlarged, extending inwards for some half inch beyond the middle line, and also well down into the pharynx. In color and appearance it appeared much like an hypertrophied tonsil, only somewhat softer and more vascular. Nothing else abnormal could be seen. Several friends to whom I showed it were inclined to think that the condition was a simple inflammatory swelling. I ordered a course of iodide of potassium, but it was soon evident that in spite of this the growth was rapidly increasing, and that glands underlying it were also enlarging. I then removed the greater part of the projecting mass with the electro-cautery, and Dr. Gulland, who kindly examined it for me, pronounced it to be

a rapidly-growing round-celled sarcoma. It was therefore evident that if it was to be removed the operation should be undertaken as soon as possible.

On January 3, 1901, my friend Mr. David Wallace operated and I am further indebted to him for the following notes of the steps of the operation. The remains of the tonsil and tissue between the pillars of the fauces and the pillars themselves were removed, together with two enlarged glands situated posteriorly and below the angle of the lower jaw. An incision corresponding to the posterior part of Kocker's normal incision was made behind and below the angle of the jaw, the enlarged glands removed, and a ligature placed on the external carotid artery. The jaw was exposed in front of the masseter muscle and divided obliquely, in a line from above downwards and forwards, and the two portions widely separated. This, after opening the mouth, exposed the region of the tonsil very freely, and allowed excision of the diseased tissues to be readily carried out. There was practically no bleeding. The jaw was united by silver suture, a drainage-tube inserted through the opening into the mouth, and the posterior part of the wound completely closed. The patient made an excellent recovery, and at the present date remains perfectly well.

Specimen of a Cheesy Mass found in an Adenoid Growth after Removal.

Shown by DR. MCKENZIE JOHNSTON. The cyst appeared to be about the size of half an almond, and was filled with a cheesy material.

DR. STCLAIR THOMSON did not think these cases were very rare. One often saw them in acute adenitis of Luschka's tonsil, but in the chronic cases they were more rarely visible in the mirror. He had had a case sent to him at the Throat Hospital for recurrent attacks of laryngitis, tracheitis and bronchitis. The patient had adenoid remains, which were removed, and all present were struck by the sickening smell of the caseous matter in the adenoid growths. It was quite possible that from time to time it gave rise to infection, spreading downwards. He did not think Dr. Johnston looked upon this condition as being of rare occurrence, but showed his specimen as being a good example of these cases. They occurred more often than was suspected.

Sketch of an Aneurism of the Aorta in Which Paralysis of the Left Vocal Cord was the only Physical Sign During Life.

Shown by DR. DONELAN. This patient, an Italian man, æt. thirty-nine, was admitted into the Italian Hospital on February 14th, com-

plaining of lost of voice, slight dyspnœ, and some numbness and pain in the left arm. He had become slightly hoarse two months before, and had complete aphonia for fifteen days before admission.

There was no history of syphilis. No physical signs could be elicited by the stethoscope. On the 15th, at the request of Cavaliere Naumann, under whose care he was, I made a laryngoscopic examination, and found the usual evidences of paralysis of the left recurrent nerve.

The diagnosis made was paralysis of left recurrent from intrathoracic tumor, probably an aneurism.

On the following morning the patient was suddenly seized with symptoms resembling those seen in angina pectoris, became rapidly collapsed, and died within two hours of the seizure.

The post mortem showed a healthy state of all the organs with important exception of the aortic arch, where a small oval aneurism was situated on the postero-superior aspect, and immediately outside the origin of the left subclavian. The tumor overlapped and compressed the left recurrent nerve in the manner shown in the rough sketch exhibited.

Case of Separation of the Upper Lateral Cartilage of the Nose in a Male æt. Twenty-Five.

Shown by DR. FITZGERALD POWELL. On May 1st of this year this patient consulted me, complaining of considerable nasal obstruction, discharge, and deformity of his nose. He stated that on June 15, 1900, he received a blow on the nose, which was followed by bleeding.

In November, 1900, he had an attack of influenza, which left him with much nasal obstruction, and in December he consulted a specialist, who did not find much the matter in his nose.

In January, 1901, a swelling suddenly appeared on his septum, which was opened, and contained pus; a drainage-tube was put in. From this time his nose began to sink and broaden.

When I saw him last May his nose had sunk in at the junction of the cartilages and the bones. The nasal bones were thickened, and the nose widened. The septum was deflected to the left, was swollen, and had an opening of a sinus, which was discharging. The upper lateral cartilages had become separated from the nasal bones.

At the present date he has much improved, the nose is more natural in shape, not so thick and wide, though the depression remains. The sinus is closed; there is no discharge, but he says he sometimes has attacks of epistaxis.

THE PRESIDENT understood that portions of cartilage had come away, the result being that the cartilaginous arch had fallen in.

DR. FITZGERALD POWELL said he showed this case as he thought it would be of interest as a comparison with a somewhat similar case shown by Dr. Frederick Spicer at the last meeting of the Society. Dr. Spicer thought that the condition in his case arose from the pressure of polypi, but the general opinion of the members was that it was due to abscess of septum, probably arising from traumatism. In the case now before them the man had received a blow on his nose on June 15th, and as late as seven months afterwards an abscess formed in his septum, which was opened and drained, and from that time the falling in of the nose took place from the separation of the cartilages. The sinus was discharging up to a month ago, but was now healed, some necrosed cartilage came away, but no bone was observed. The shape of the nose appeared to be improving.

A Case of Chronic Ulcer of the Septum (Tuberculous ?).

Shown by MR. WALTER SPENCER. This occurred in a girl *æt.* eighteen, who worked with dusty wollen goods. The ulcer was situated on the left side of the septum, and had been present for a year, during which time there had been some healing at its lower part, but some extension upwards. There is now an ulcer about $\frac{1}{2}$ cm. in diameter covered by granulations, which easily bleed. The cartilage is not exposed. She has a ringing cough, but there is no evidence of lung or laryngeal disease, nor have tubercle bacilli been found with sputa. The treatment applied has been simple, only alkaline douches and ointments.

DR. MCKENZIE JOHNSTON said from the view which he had obtained there seemed nothing to favor the idea of tuberculosis. He considered it of a simple nature.

MR. PARKER looked upon the case as one due to dry rhinitis.

THE PRESIDENT thought there was an absence of evidence of tuberculosis in this case.

Three Cases of Bilateral Abductor Paralysis in Tabes Dorsalis.

Shown by SIR FELIX SEMON.

Case I.—G. B., toy-maker, *æt.* fifty-one (under Sir William Gowers). Syphilis twenty-five years ago. No secondary symptoms.

Present illness began three or four years ago with pains and pins-and-needles in legs and feet, and some difficulty in walking. Quite from the beginning he had "choking attacks" at night. Stridor at night first noticed about three years ago, and during last three months has been present also in the daytime if he exerts himself at all. Has also had transient diplopia and a girdle sensation. Hesitant micturition for two years. No incontinence.

Status, April 26th, 1901.—Pupils R. > L., Argyll-Robertson type. Partial bilateral ptosis. All deep reflexes absent. Superficial reflexes brisk. Marked ataxia of legs. Well-marked Rombergism. Well-marked analgesia of trunk, ulnar borders of arms and legs.

Larynx, May 3d.—Marked double abductor paralysis, almost complete. The left cord is a little better abducted than the right, but even then the maximum width of the glottis in inspiration is only $1\frac{1}{2}$ to 2 mm. Subjective and objective dyspnea is considerable.

4th.—Tracheotomy performed by Mr. Ballance.

31st.—The glottis is a little wider than it was four weeks ago during inspiration.

In remarking on this case, Sir Felix Semon said he wished to draw particular attention to the fact that since the performance of tracheotomy, the inspiratory inward movement of the vocal cords had ceased. This fact was held to be important in connection with the question whether such inspiratory inward movements were due to a purely mechanical cause, viz.: to the rarification of the air below the stenosis during inspiration—a view held by the older laryngologists, and the speaker—or whether it represented an active inward movement of the vocal cords due to the fact that during respiration both abductors and adductors were simultaneously innervated, and that the abductors having been paralysed, the innervation of the adductors alone prevailed. This view had been advocated by Rosenbach, Burger, and others. If it were correct, one would naturally expect the inspiratory movement to continue even after the performance of tracheotomy. The disappearance of the movement in the present case was held to point strongly in favor of the mechanical theory.

Case II.—C. L., barman, æt. thirty-two (under Dr. Bastian). Syphilis fourteen years ago. Temperate in alcohol, non-smoker.

Present illness began three years ago with a heavy feeling in his feet and sudden giving way at the knees. Soon after he began to have lightning pains. Two years ago he was told that he snored very much at nights, a thing which previously he did not do; this snoring has continued ever since. Sixteen months ago began to have difficulty in walking, which has steadily increased. About five months ago first had choking attacks at night, and on one occasion lost consciousness in one of these attacks. No bladder trouble.

Status, May 13th.—Pupils small, R. > L., Argyll-Robertson type. Knee and Achilles jerks absent. Elbow and wrist jerks, di-

minished. Superficial reflexes brisk. Marked ataxia of legs, with extreme Rombergism. Some analgesia of legs.

Larynx, May 31st.—The larynx shows abductor paralysis on both sides with paresis of the internal thyro-arytenoid and the inter-arytenoid muscles. The glottis in front on deep inspiration forms a small ellipse, the vocal processes of the arytenoid cartilages almost touch one another; behind them a comparatively large triangular gap remains.

Case III.—T. W., smith's laborer, æt. thirty (under Dr. Bastian). Father of patient died of "religious mania." Syphilis fourteen years ago. No secondary symptoms.

Present illness began with gastric and rectal crises two and a half years ago, and have recurred at intervals ever since. Ten months ago began to have also difficulty in walking and lightning pains. About the same time first had choking attacks at night, and soon after noticed a change in his voice. Has had also girdle sensation and precipitate micturition.

Status, March 1st.—Pupils L. > R., Argyll-Robertson type. Double ptosis. Knee jerks absent. Slight ataxia and Rombergism. Analgesia of ulnar borders of arms and of lower part of trunk.

Larynx, March 8th.—Considerable bilateral and asymmetrical abductor paralysis with slight paresis of the internal tensors. On phonation the cords come promptly together, and only a very small elliptic gap remains in the middle part of the glottis. On deep quiet inspiration the cords are never separated more than about $2\frac{1}{2}$ mm. in the broadest part of the glottis; their inner borders are slightly excavated, and a small triangular gap remains in the cartilaginous part of the glottis. The speaking voice has a slightly forced mournful character. Patient states that he has lost several notes in the upper register.

The PRESIDENT remarked on the great interest of these cases, but at such a late hour of the meeting he thought it would be impossible to enter upon a full discussion of the subject. The case in which tracheotomy had been performed was, he thought, of especial interest.

DR. FITZGERALD POWELL asked Sir Felix Semon when in his opinion it was necessary to perform tracheotomy in such cases.

MR. WAGGETT asked what Sir Felix thought of the plan of early tracheotomy in such cases as these, the ordinary cannula being replaced by a solid plug. This measure would relieve the patient of danger from sudden and fatal dyspnea, while at the same time avoiding the disadvantages of permanent respiration through a cannula.

SIR FELIX SEMON said that at this late hour it was impossible to fully enter upon the discussion of the points which had been raised by the various speakers. With regard to Dr. Fitzgerald Powell's

question, he wished to say that this subject had been discussed quite recently in the Society, when he had stated the principles which now guided his action as to the performance of tracheotomy in cases of bilateral abductor paralysis in tabes. It was a very difficult question, indeed, and the decision must be made dependent upon the degree of stenosis, and the question of serious choking fits supervening, whilst a full explanation of the situation ought to be given to the patient, and the decision in doubtful cases be left to him. The occurrence of paralysis of the interarytenoid muscle, which as a rule followed the original abductor paralysis somewhat later than the paralysis of the internal tensors, was a blessing in disguise to the patient, as the greater opening of the glottis resulting from this paralysis greatly diminished the danger of suffocation. As to the permanent wearing of a tube, he thought that the dangers and discomforts it was said to entail were more theoretical than real. He had a patient, a stock broker, on whom he had performed tracheotomy twenty-one years ago for bilateral abductor paralysis, who was fully able, whilst still wearing his tube, to follow his occupation, and he had never suffered from bronchial or pulmonary affections.

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SELECTED ABSTRACTS.

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EDITORIAL STAFF.

Primary Chancre of the Septum of the Nose—W. FREUDENTHAL—

N. Y. Med. Journal, May 11, 1901.

A brief résumé of the literature on extragenital chancres is given. Primary lesions of the nose are not common. The case under the author's observation occurred in a physician, and was not diagnosed as specific for some time. The patient remembered, after his attention had been called to the possibility of infection from his fingers, that he had examined a female, per vaginam, who proved to be syphilitic. It is possible that he picked his nose (as was his habit) unconsciously at that time. Secondary eruptions appeared soon after. Glandular enlargements of the head also followed. Under anti-specific treatment a good result was obtained.

M. D. LEDERMAN.

Endothelioma (Adenoma) of the Base of the Tongue Simulating a Struma of the Tongue—J. E. SUMMERS, JR. (Omaha)—

West. Med. Rev., May 6, 1901.

Patient was a married woman, aged thirty-two, with unexceptional family history. Upon ordinary inspection of the pharynx nothing was discoverable, but when the tongue was well depressed sufficiently to cause gagging, an English walnut-sized growth was plainly visible. Under partial chloroform narcosis, after doing a precautionary tracheotomy, the tumor was removed with scissors. Patient left the hospital two weeks after the operation, and has remained well. On examination the tumor was found to be: Length, 44 mm.; width, 35 mm.; thickness, 33 mm.; weight, 15½ grams.

Color, whitish red; encapsulated; fibrous texture; nodose in appearance. A long and detailed microscopical examination is given, and the careful study, and "efforts in searching out a proper classification seem to unquestionably place the growth as an 'endothelioma,' comparable with similar growths in the submaxillary and parotid glands."

The pathology, as viewed by various writers, is also given.

EATON.

A Case of Membranous Angina Due to Streptococci, Followed by Paralysis of the Soft Palate—M. KESCHNER (New York).
Med. Record, June 1, 1901.

The patient was twenty years old, and had been ill but one day. On examination, the tonsils, uvula, anterior and posterior faucial pillars were covered with a thick, dirty, yellowish-gray, tenacious membrane. Bacteriological examination showed short-chained streptococci, a few staphylococci; no Klebs-Löffler bacilli; a culture in blood serum examined after twelve hours' incubation showed almost a pure growth of streptococci. In a week the membrane had disappeared, but in the interim the patient showed a clinical history of local diphtheria, and gave evidence of profound systemic infection.

After eight days there was a paralysis of the soft palate, but no evidence of paralysis elsewhere. Under large doses of strychnia by the mouth, an improvement was noticed. M. D. LEDERMAN.

Deformities or Defects in Development from Adenoids—JOHN. A. THOMPSON—*Cincinnati Lancet Clinic*, April, 1901.

We find in adults who have had adenoids in childhood, narrow slit-like nostrils, with turbinates too small to perform their normal functions. The vertical dimensions of the nose are also lessened by the coexistent deformity of the mouth. A neglected case of adenoids in childhood will in adult life remain a mouth-breather.

The external nose presents appearances of deformity in the shape of a broad and flat root, with a pinched and narrow end.

This condition presents a dome-like arch of the hard palate which increases in height where the condition of obstruction persists beyond the period of second dentition. An arrest in development of the upper lip causing a greater apparent projection of the upper front teeth.

STEIN.

Pathology of Deaf-Mutism—J. J. CARROLL (Baltimore)—*Journ. Eye, Ear and Throat Dis.*, March-April, 1901.

St. Hilaire, in a recent publication, collected from medical literature 150 autopsies on deaf-mutes. Numbers of these autopsies were made long ago, when the knowledge of anatomy and physiology was not as far advanced as to-day. The autopsies of the last fifteen years have been more complete and the author gives a summary of the lesions found in the tympanum, membrana, internal ear, semi-circular canals and auditory nerve.

He sums up the data furnished by the 150 autopsies as follows: "The pathology of deaf-mutism varies greatly; all the anatomical alterations of the ear, which are capable of producing grave deafness, have been found in deaf-mutes. But no one organic lesion has been constantly present, and according to the present state of our knowledge, there is no single definite pathological condition which is characteristic of the disease. We need further investigation, more careful and intelligent study of pathological specimens obtained from autopsies on deaf-mutes."

EATON.

Superheated Air in the Therapeutics of Chronic Catarrhal Otitis

Media—G. A. HOPKINS (Cleveland)—*Med. Record*, June 1, 1901.

This treatment is recommended in chronic catarrhal cases which are characterized by ankylosis of the ossicles. The same idea is carried out, as is followed in the treatment of various joints in other parts of the body, only the face and head are more sensitive and consequently precautions must be taken to avoid unpleasant consequences.

The ear must be cleansed for a few days before the heat is applied. Alcohol was employed for this purpose. Strips of gauze were then placed into the canal, and a large pad of gauze was put over the ear to be treated. The ear was then covered with the canvas-sleeve hot air conductor from the specially devised gas-stove, and a current of air reached the canal at a temperature which gradually attained a temperature of 400°F. This degree of heat was readily borne, but a severe headache at times follows, which was relieved by a dose of codein. Other local treatment was applied through the Eustachian tube at the same sitting. Good results are recorded.

(The abstractor would suggest the use of ice-cloths or bag to the head while the heat was being applied to avoid the annoying headache).

M. D. LEDERMAN.

Protargol: Some of Its Uses in the Nose and Throat—WILBUR F.

SKILLMAN (Baltimore)—*Journ. Eye, Ear and Throat Dis.*, March-April, 1901.

According to the author, for all ordinary purposes in nose and throat work, one, two, five, eight and ten per cent solutions in water are sufficient. These solutions are permanent, and do not decompose from exposure to light, heat or air.

In acute rhinitis a two per cent solution sprayed into the nose was found to often produce brilliant results. In acute and subacute rhinitis in children a two per cent solution was found to be too irritating, and a one-half per cent to one per cent solution was used.

In chronic rhinitis the results were not marked. In chronic rhino-pharyngitis and in chronic pharyngitis the results were as good, if not better, than with other forms of treatment. The treatment was started with a one per cent solution rapidly increased to ten per cent.

In the treatment of acute laryngitis, the results with protargol were not gratifying, and the cases did not seem to improve nearly so well as under other plans of treatment. The treatment of chronic laryngitis by the drug was found to be very satisfactory. Starting with a two per cent solution applied to the larynx by a mop or spray, preferably the latter, the strength of the solution was gradually raised to ten per cent.

EATON.

An Effective Electric Trepine—S. S. BISHOP, M.D., (Chicago—*Journ. A. M. A.*, March 30, 1901.

The accompanying cut shows the exact size of two electric tubular saws, or trephines, the smaller of which is the one in common use in surgery of the nose in its connecting cavities. This instrument is capable of rendering excellent service where little work is to be done; but it has several serious faults which the writer has overcome in devising the larger trephine.



In removing a large and long spur from the nasal septum, it is necessary to trephine through the center of the spur, then above and below the center in lines parallel with the first section, if the small trephine is employed. If the spur is longer than the tube of the trephine, the instrument ceases to cut as soon as it penetrates the distance of its own length, for the portion of the spur that enters the tube fails to pass out of the counter-opening as fast as it enters the tube, and it prevents the saw from entering further. This necessitates withdrawing the trephine, removing the cut portion of the spur and readjusting the trephine for proceeding with the cutting. Meanwhile the field of operation is likely to become covered with blood, and more time is lost in removing this in order to see what tissues one is attacking.

The large trephine has a counter-opening as capacious as can be made without sacrificing the strength of the tube, so as to allow the contents to pass out as fast as they enter. It is much longer than the average spur, so that it would operate more satisfactorily than the small trephine, generally, even if the counter-opening were smaller. Its generous diameter renders it necessary to drive the instrument through the tissues fewer times in order to remove a given amount of the growth.

In operating on the maxillary antrum the large trephine gives better results than the other. By passing the large instrument once into the antrum a canal of good size is obtained. Formerly I have passed the small one twice, and more times in some cases before obtaining a sufficient opening for free drainage and efficient treatment. The large trephine is well adapted for opening the frontal sinus and the mastoid antrum.

Note on the Treatment of Otorrhea—DAVID WILLIAM AITKEN—
The Lancet, April 20, 1901.

Although the method is quite prompt in its effects upon acute otorrhea, its benefits are greatest in old-standing cases where the mastoid has become infected. The appliances required are a probe, some antiseptic lotion, and some absorbent cotton. The best probe for the purpose has at the end two spiral teeth which, while they hold the wadding firmly, permit of its easy removal by rotating the stem counter clock-wise. The first step is to pour into the ear some of the lotion. Then take as large a plug of wadding as is deemed sufficient when screwed upon the probe to easily fit the meatus. It is now possible to make the probe and ear canal a suction syringe. The plug of wadding which forms the piston is gently pushed in and then withdrawn. If it is found to be either too large or too small another can be at once substituted which acts both easily and also fits close enough to force some of the fluid before it. This fluid reaches both the attic and also the mastoid recesses. At any rate, on the first withdrawal sufficient vacuum is produced to allow the lotion to enter the accessory cavities. It will surprise anyone who has not carried out this procedure to note how much discharge and *bébris* are brought to the surface, even after syringing and swabbing have been efficiently performed. After several repetitions of the maneuver, the head each time being turned to the opposite side to permit of emptying the meatus, the lotion will well up clean. Now, one can get any medicament to the clean surfaces. Begin with chinisol, iodoform, or amyloform in alcohol, which, in the author's experience, is best in the absolute state. It is practically painless in almost all cases, and in the exceptions the smarting is but momentary. Its advantages are: (1) It acts promptly upon the poly-poid growths; (2) it is a most satisfactory antiseptic; and (3) as it evaporates it leaves a dry surface. This is most important. When the solution has been poured into the ear the process with the "piston-rod" is repeated several times. Thus the fluid is forced into all the recesses. That this is so is seen by the prompt improvement both in the local condition and also in the constitutional state. Of course, discretion is used as to the nature of the drug selected in the progress of the cure, according to the requirements—stimulant, astringent, etc.—of the case. It is unnecessary to select examples. Suffice it to say, that many cases have been treated, and that in some the patients have probably been saved from the somewhat serious operation of trephining the mastoid.

STCLAIR THOMSON.

Poisoning from the External Use of Aniline Oil—STCLAIR
THOMSON—*The Lancet*, April 20, 1901.

Equal parts of aniline oil and rectified spirits having been recommended as a vehicle for cocaine in order to produce local anesthesia in the ear.* Dr. Thomson prescribed a 10 per cent solution of co-

* Dr. A. A. Gray, *The Lancet*, April 21, 1900, p. 1125.

caine in this menstruum for a colleague suffering from furunculosis. A small pledget of cotton-wool moistened with this solution was used at bedtime and the patient slept well. Next morning, as the pain threatened to return, he again made use of the drops about 5 a. m. At 7:30 a. m., while still in bed, he quite accidentally noticed a peculiar blueness of his finger-nails, and his wife remarked that his face was also blue. The face and hands were found to be of a decided dark blue color, and this was noticeable in the skin under the finger-nails and on the lips and tongue. There was no fever or mental disturbance. The pupils were normal. The respiration was quiet and easy. The pulse was small and somewhat increased in frequency, and when Dr. David Lees had examined the heart the left ventricle was enlarged to two finger-breadths outside the left nipple line. The patient had not previously had any heart trouble, and there was nothing discoverable in the heart or lungs to account for the cyanosis. It was therefore ascribed to the toxic effect of the aniline oil on the red corpuscles. The blue color gradually disappeared in the course of the day. The area of cardiac dullness again became normal, and no murmur was discoverable. Reference was made to a communication made to the Académie de Médecine in July last by M. Landouzy and M. Georges Brouardel describing the cases of ten children who were seized with prostration, pallor, and blueness soon after wearing yellow shoes which had recently been coated with a pigment found to contain 90 per cent of aniline. When this dye was applied to the shaven surface of the skin of guinea-pigs and rabbits they died asphyxiated in from twenty-four to thirty hours. Some unpublished cases of Dr. Kelynack described similar symptoms, together with gastro-intestinal catarrh and anemia in chronic cases, among those employed in aniline works. Evidently the skin readily absorbed aniline, and this might give rise to alarming symptoms, which could not otherwise be explicable.—Dr. Charles W. Chapman said that he was the patient whose case had been described, and remarked that the most important point seemed to be the cardiac dilatation, which had called for prolonged rest. Unless this were remembered in future cases, a patient by getting about too soon might inflict permanent damage on the dilated heart. He also remarked upon the smallness of the dose.—Dr. Lewis G. Glover, alluding to Dr. Thomson's remark that the symptoms reminded him of poisoning by antipyrin, asked whether any cardiac dilatation had been noticed in this connection. He referred to a case in which large doses of exalgin had been taken, and he had noticed marked blueness but no cardiac dilatation.—Dr. StClair Thomson, in reply, said that in a case of antipyrin-poisoning he had noted some cardiac dilatation, but, as the patient was suffering from typhoid fever, the dilatation might possibly have been caused by the fever.

STCLAIR THOMSON.

BOOK REVIEWS.

Coakley: The Nose and Throat. The Diagnosis and Treatment of Diseases of the Nose, Throat, Naso-Pharynx and Trachea. For the use of Students and Practitioners. By CORNELIUS G. COAKLEY, M.D., Professor of Laryngology in the University and Bellevue Hospital Medical College, New York. New (2d) edition. In one handsome 12mo. volume of 556 pages, with 103 engravings and 4 colored plates. Cloth, \$2.75, net. Lea Brothers & Co., Philadelphia and New York, 1901.

It is not surprising to us that the demand for Dr. Coakley's eminently practical and up-to-date manual has so quickly called forth a second edition, and we can only repeat our commendations made with the appearance of the first edition.

In the revision, the author has added a new chapter on Affections of the Upper Respiratory Tract in the Infectious Diseases, together with several colored plates and additional illustrations. M. A. G.

Principles of Surgery. By N. SERN, M.D., Ph.D., LL.D., Professor of Surgery in Rush Medical College in Affiliation with the University of Chicago; Professional Lecturer on Military Surgery in the University of Chicago; Attending Surgeon to the Presbyterian Hospital; Surgeon-in-Chief to St. Joseph's Hospital; Surgeon-General of Illinois; Late Lieutenant-Colonel of United States Volunteers and Chief of the Operating-staff with the Army in the field during the Spanish-American War. Third Edition. Thoroughly Revised with 230 wood engravings, half-tones and colored illustrations. Royal Octavo. Pages, xiv—700. Extra cloth, \$4.50, net; sheep or half-russia, \$5.50, net. Delivered. Philadelphia: F. A. Davis Company, Publishers, 1914-16 Cherry Street.

To the broad-gauged and progressive otologist and laryngologist the great import of a clear and proper understanding of the general principles of medicine and surgery is apparent. In the publication of this volume the author has departed from the regulation plan and construction of recent works on surgery in that his main purpose is subserved in presenting a systematic treatise of surgical affections with special emphasis directed to their histological, pathological and etiological factors.

The work is comprehensive and yet exhaustive. It might have equally well been called "A Treatise on Surgical Pathology," planned along the lines of recent research and twentieth century surgery. M. A. G.

Diagnostic et Traitement des Maladies Du Nez, "Rhinoscopie." Par LE DOCTEUR J. GAREL, Médecin des Hôpitaux de Lyon. Deuxieme edition. J. Rueff, Éditeur, Paris, 1901.

In this charming little book, devoted exclusively to diseases of the nose, the author has succeeded admirably in condensing all the rudimentary and well-established facts connected with the science of rhinology without sacrificing clearness of description to brevity of style or omitting anything essential.

To subjects that have recently received considerable attention from rhinologists, or diseases whose treatment is still a matter of dispute, he gives proportionately greater space and carefully discusses the proposed methods of treatment, clearly stating his reasons for preference.

The chapter on diseases of the accessory nasal cavities is especially well worth reading. Garel's favorite method of treating empyema of the maxillary sinus is by catheterization with Heryng's instrument, which he states can be introduced in sixty per cent of the cases. Through this instrument the cavity is thoroughly syringed with boric acid solution and no operative measures are resorted to unless this simple and painless method fails to effect a cure. The sinus is never opened in uncomplicated cases as a mere matter of diagnosis.

After mentioning the names of the various authors who have devised operations for the correction of deflection of the nasal septum he describes only two, those of Asch and Gleason. However, he states that radical operations for the correction of septal deflections are but infrequently employed upon the continent. Garel prefers electrolysis as described by him at the congress in Paris, 1889, because there is less danger of sepsis; but states that if as the result of electrolysis a perforation of the septum results it occasions no inconvenience. This is only true of perforations not in the anterior third of the septum and in America sepsis rarely or never occurs after a radical operation for deflection of the septum. Electrolysis has been almost entirely abandoned in America, even for ecchondroses, because the operation is more painful and tedious and gives no better results than the saw or knife. In deflections of the septum, it in no wise changes the condition of the wider nostril, the condition of which often causes more complaint on the part of the patient.

E. B. G.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
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THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 116.)

CELSUS AND THE PRÆ-GALENIC WRITERS.

In the eight books of the "De Medicina," which remain to us from the writings of Aulus Cornelius Celsus, who was probably born in the last days of the reign of Cæsar Augustus, about the beginning of the Christian era, are found several chapters which deal with the diseases of the upper air passages. Written by a Roman patrician, it is the first and almost the only work of medicine which has come down to us written in the Latin tongue as used by Virgil and Horace,* and all that brilliant coterie of men who adorned the imperial courts of Augustus and Tiberius, and sauntered through the gardens of Mæcenas. As an interpreter of Hippocrates he was profoundly influenced by the precepts of Asclepiades, but he evidently was a man of virile understanding

* The following lines have been held by some medical historian to refer to the physician Celsus, but there seems every reason to believe it was the somewhat earlier poet Celsus to whom Horace here, as several times elsewhere, alludes:

"Quid mihi Celsus agit? monitus multumque monendus
Privatus ut quærat opes, et tangere vitet
Scripta Palatinus quæcumque recepit Apollo,
Ne si forte suas repetitum venerit olim
Grex avium plumas moveat cornicula risum
Furtivis nudata coloribus."—(Horat. Epist. I, 3, 15).

We see by this extract that the library on the Palatine Hill, founded by Augustus was already in requisition by writers, and already the charge of plagiarism was much indulged in by the literati.

and original powers, whose works still contain much of value to the surgeon.

Coryza.

In his chapter on coryza (Lib. IV, Cap. V), he repeats the conviction of Hippocrates that some cases of phthisis owe their origin to catarrh of the upper air passages. "Destillat autem humor de capite interdum in nares, quod leve est; interdum in fauces, quod pejus est; interdum etiam in pulmonen quod pessimum est." For him, as for Hippocrates before him and Galen after him, the humor dripped through the cribiform plate. So far as the coryza is concerned, indeed, he says, there is nothing pestiferous about it unless it ulcerates the lungs. He recommended as treatment abstention from daily routine, and protection from the weather, as well as abstention from the bath, wine and venery. He approved of active exercise in the house and laid great stress upon massage. He advised against overeating and recommended that only a half pint of water a day be taken as drink. Warm vapors, the head and neck wrapped in flannel, and especial care to be given to the diet, were also urged. These prescriptions were varied somewhat as the discharges became thicker, but at all stages massage and exercise were to be employed.

Angina,
Kynanche,
Synanche.

In regard to throat inflammations (Liber IV, Cap. VII), those which are confined to the fauces, he said, the Romans called angina, while the Greeks gave the name synanche to that form in which there was dyspnea without any appearance of inflammation in the fauces, and cynanche to that form where the obstruction could be made out in the fauces. The Greeks supposed the former condition (i. e. the synanche) to be due to the disease of the "pneuma" itself, and that this it was which caused a collapse of all the parts of the chest and neck.*

With Celsus cupping, bleeding, purging were the remedies employed, the cups to be applied around the fauces. Hyssop, thyme, absinthe, bran or dried figs steeped in water were the highly agreeable gargles he used, though all his prescriptions were not so mild. Vinegar, powdered pepper and oxgall also formed part of his pharmacopeia. In certain cases he made deep incisions externally beneath the jaws and bled from the lingual veins. His incision into the palate above the uvula (VI-X) was

* There seems to have been great confusion among the Greek medical writers at this date in the use of the two terms. Galen in his "Commentaries on the Prognostics of Hippocrates" (Edit. Kühn XVIII, B. 267), intimates that the two terms arose out of a different reading of the initial letter in the word, as used by Hippocrates, by different writers, and that Hippocrates made no distinction. This is probably the correct explanation. We will find Aretæus making elaborate distinctions in the use of the terms.

more in accord with modern practice in quinzey. Without the necessary differentiation of diphtheria from quinzey or other inflammatory processes, we can readily understand his remark that "if the patient is not aided by these things, then we may know he is a victim to this disease." He apologizes for mentioning a remedy, which seems later to have been very popular in Rome for centuries, saying that it was somewhat out of place in a scientific work. Pliny and Galen mention the same and speak highly of its efficiency. A swallow either fresh or salted, having been kept thus in the house for the purpose, is to be burned to a cinder and the ashes, moistened in water, are to be applied to the throat in a threatened attack of angina. Pliny* dwells on the same remedy at considerable length, and dilates on the difference in the efficacy of the different kinds of swallows. On a reference to the Hindu Susruta (Vol. II, Cap. XXII) will be found the prototype of this prescription. "In affections (of the throat) arising from the blood and bile, cure is obtained by the use of swallows." This is one of the many instances of the Oriental origin of this sort of therapy. Celsus thinks no apology necessary when in the next chapter on dyspnea he recommends a paste made of dried fox liver powdered. He also advises it should be roasted and eaten. Even for dyspnea he recommends moderate exercise and does not forget massage.

"By far the most perilous of all ulcers (of the mouth) are those which the Greeks call *Ἀφθῆς*, chiefly in children, for in men and women there is not the same peril." (VI-XI). Evidently this is diphtheria. He remarks that ulceration of the fauces is frequently followed by a cough, for which, of every description, he recommended long sea voyages, sea-side resorts and sea bathing. (IV-X). He devotes a chapter (IV-XI) to the spitting of blood and recognizes vicarious menstruation among other more frequent causes.

For ulcerated nares he recommended (VI-VIII) vapor of hot water from a narrow-necked vessel, and mineral astringents were applied to the ulcer. "But if these ulcers are around the openings and they have many crusts and a foul odor, which variety the Greeks call *Ὠζῆσις*, it should be recognized that it is hardly possible to cure this disease. Nevertheless these things may be tried; let the head be shaved to the skin, and persistently and vigorously rubbed; let it be bathed with plenty of hot water; let there be much walking; moderate food, nothing very sharp or very

* Hist. Animal. XXX, 4, 12.

strong; then in the nostrils let honey be applied with a small amount of the resin of turpentine, which may be used on a probe wrapped with wool; let this liquid be drawn in with the breath until the taste of it is perceived in the mouth; by the use of this the crusts are loosened, which may then be removed by the use of sternutatories." How accurate this prognosis was we still have reason to know; how excellent the local treatment was we still bear testimony to in our present therapy of irritating applications to the nostrils. We recognize here another method of treatment which has been thought to be entirely modern. He advises leaving pledgets of lint saturated with some medication in the nostrils, this to be done twice a day in winter and spring and thrice a day in summer and autumn.*

In another place (VII-XI) he describes a very radical surgical operation for the cure of ozena, which has also been urged by at least one modern author.† Celsus does not, however, himself indorse the operation, which consisted in the use of the actual cautery through an earthenware tube or the quill of a writer's pen, and the affected parts thoroughly seared, and the wound dressed with astringent and soothing applications. Nasal polypi, which he likened in appearance to the nipples of a female breast (VI-VIII), he treated by caustics. He described them as showing in front on the lip and sometimes behind, "by that foramen through which the breath descends to the fauces," hanging down so that it may be seen behind the uvula, and in cold, damp days it strangles a man. Some he calls *καρκινώδης*, and these should not be touched. Elsewhere he shows how the other kind may be cured by operation (VII-X). He used a sharp instrument like a spatula to separate it from the bone, and then by means of a hook it was to be removed. His surgical treatment for large and hard tonsils was to separate them from the sides of the throat with the finger (VII-XII) and tear them out, or drawing them inwards with a hook to cut them off. His operation for uvulotomy has not been improved upon. He cut the frenum linguæ for trouble in speaking, and this relieved many, but he had seen it fail once. He also was familiar with ranula. He mentions hare-lip, and elsewhere (VII-IX) describes operations for the cure of

* " * * linimentum involutum et oblongum eodem medicamento illinendum, demittendumque in nares, et ab inferiore parte leniter deligandum. Idque per hiemem et ver bis die; Per æstatem et autumnum ter die fieri debet." Bertherand, *Médecine et Hygiène des Arabes*, 1855; p. 502, notes the treatment of ozena among Arabs, of Algeria by means of insertion in the nostrils of a seton of wool or a tuft of hair soaked in honey and some irritating substance. These, of course, are what we know as Gottstein's tampons.

† Rethi: *Arch. fur Laryngol. und Rhinol.*, Band ii, Heft 2.

that and other deformities about the face by plastic methods. He operated on bronchocele by making an incision through the skin and shelling the tumor out with the finger (VII-XIII). It may be easily seen from these few extracts that Celsus was well entitled to the name which has been given him—the Roman Hippocrates.

We have already had occasion to quote from Pliny knowledge which he said he had derived from the Magi. He died at the foot of Mount Vesuvius on that dreadful day (August 25, 72 A. D.) after a cloud shaped like a pine tree had the day before shot up in the air above the smoking mountain. It was seen by Pliny from his villa on the shore of the beautiful Bay of Naples at Misenum, and summoning the Roman galleys he commanded, he sailed into the mephitic vapors to rescue his terror-stricken friends, and perished in the attempt. Pompeii and Herculaneum lay buried beneath the hot ashes and cinders, and thus kept treasured up for eighteen hundred years the relics of the power and pride of Rome, who thought herself mistress of the world, to excite the wonder and curiosity of travelers from lands she had never dreamed of. He lay dead upon the shore, a brave man and a philosopher, and the work which he left behind him, the *Historia Naturalis*, became all through the Middle Ages the source from which credulous humanity derived its pharmacopia.

In the Dark Ages, among the half-civilized barbarians who flooded the Roman Empire and nearly extinguished the torch of civilization, the necromancy and the filthy drugs of Egypt and Chaldea found the ready market which Grecian culture and Roman civilization in the better ages never offered. The entrails and excreta of birds and reptiles and shell fish, all manner of fish, bird and beast, besides innumerable plants and minerals fill page after page of Pliny's treatise. Large numbers are recommended for nose and throat diseases, with very little discrimination as to the affections for which they were prescribed. In fact, one pursues the record of drug therapy through the history of medicine with very little profit. One may sum it all up by saying that human ingenuity has applied all medicaments to every disease.

The Therapy
of Pliny.

Perhaps, after all, the best definition of a drug is that incidentally given by Montaigne in boasting of the health of his progenitors: "For them everything which was not in ordinary use took the place of drug." For an illustration of these remarks one may turn to Dioscorides, whose botanical and pharmacological work dates from about this time. Here we may find the swallow pre-

scription in many forms, not only for anginas, but for many other affections.

Aretæus.

The Uvula.

The Roman Empire, by the victories of Cæsar and Pompey, had undergone an immense expansion. All roads soon led to Rome. Asclepiades we have seen as the friend of Crassus and Cicero, but he came to Rome for fame and practice from his native Bithynia. It is not certain that Aretæus lived in Rome, though it is probable he was acquainted with the practice of Italy. He was a native of Cappadocia. Even the exact date of the medical activities of Aretæus seems very uncertain, but it is supposed that he lived shortly before the birth of Galen (131 A.D.), in an era extending perhaps from the reign of Titus (79 A.D.) to that of the great Marcus Aurelius (161 A.D.). It is singular that so few contemporary and subsequent medical authors mention Aretæus, whose writings in perspicuity of observation and brilliancy of execution are surpassed by none in the history of medicine. His chapter on diseases of the uvula is an interesting exposé of the different appearances presented by that organ in disease. The inflamed, reddened œdematous uvula; the elongated uvula, sometimes with what was apparently a papilloma at the end of it; the broad uvula, with bat-like wings at the side—for all these he had separate names—besides the bifid uvula, for which he had no name (“but which was recognizable by all”), while that is especially the form to which we moderns have given a name. He also described a condition left behind after an oblique amputation by the physician, a piece of membrane hanging down at the side. As to the symptoms we may use the translation of Adams:* “A sense of suffocation accompanies all these affections, and they can by no means swallow with freedom. There is cough in all the varieties, but especially in those named *lorum* (a broad, flat strap), and *fimbria* (the border or edge; this is the variety having a club-shaped end to it). For a titillation of the trachea is produced by the membrane, and in some cases it secretly instils some liquid into the windpipe, when they cough. It is safe to apply the knife in all these varieties; but in the *ura*, while still red, hemorrhage, pains and increase of inflammation supervene.” In the chapter on the treatment of disease around the uvula, he states that many of them require surgical treatment, but these he does not discuss, his work on surgery having been lost. In this chapter it is evident that some severe faucial inflammation, accompanied by œdema of the

* Sydenham Edit. 1856. Of the Affections about the Uvula; Therapy of Acute Diseases. Book I, Chap. VIII.

uvula and by symptoms of dyspnea, many of the cases ending fatally, were familiar to Aretæus. We can only conjecture that some of these were diphtheria. His therapy was not especially different from that of Celsus in such cases, but at the end of this chapter on the therapy of the diseases of the uvula, occurs a sentence which to me is inexplicable on any other ground than that of the existence of syphilis, or again of some disease with which we are now not familiar, as I remarked in citing a similar passage from the Epidemics of Hippocrates. In this sentence of Aretæus the suggestiveness, to my mind, is still more striking. We may translate it thus: "But should the part become purulent, in some, the bones of the palate are destroyed, and having lingered a long time wasting away, they die." Now "consumption," as Adams translates it, does not produce necrosis of the palate except in very rare cases, and in these almost never beginning as a primary disease, but rather as a rare incident in the progress of general tuberculosis. Personally I have never seen a case of necrosis of the hard palate caused by anything but syphilis, though, of course, as before remarked, we must keep in mind the rare cases of scurvy and phosphorus poisoning.

Syphilis.

I have already had occasion to refer to the use of the two words kynanche and synanche, and have quoted Galen's remark that the difference apparently arose from the different readings of the initial letter of the word by the transcribers of the Hippocratic treatises. Cynanche (κυνάγχη) is a word applied to the choking of a dog, and Aretæus makes a part of his clinical picture of throat inflammation to consist of the tongue sticking out as a dog does, even in health. It must be borne in mind that Aretæus was supposed to be a disciple of the chief exponent of the Pneumatists, Archigenes, and hence we find him saying that he believed synanche to be a disease of the "pneuma" pure and simple, and he applies the term to those cases in which no obstruction is visible, or to those in which the inflammation has also descended to the thorax, but whether to one or to the other, they all have the common symptom of dyspnea, and he adduces the significance of the word, not as Galen suggests, but from the collapse of the parts about the neck and chest. Of course, it is evident here again that there is a misleading classification of throat inflammation, and if we take into account our present system, and we perceive the classification of Aretæus is really founded upon the situation of the lesion rather than its nature. That some of these cases were also diphtheria admits of no doubt, but in the category he also included peri-

Kynanche and
Synanche.

tonsillitis and the graver forms of phlegmonous inflammation. As in Celsus, we find mention made of abscesses in these cases opening here and there around the ears externally, and it again becomes evident that they were familiar with more cases of severe and deep inflammation around the fauces than are we.

After admiring the many agreeable prescriptions recommended by Aretæus, we are shocked in the description of an elegant poultice scented with bay leaves, to find him gravely advising, as very efficacious in promoting suppuration, that the surface shall be sprinkled with the finely sifted dung of pigeons and dogs; but, on the whole, the treatment of the simple inflammatory conditions by local applications we recognize as most judicious. When it is apparently diphtheria, or other obstructive disease of the larynx, Aretæus and his confreres were helpless, and recognized the malady as deadly. He tried to bring the disease outward by sweats and counter irritation. In this place, the chapter on the

Laryngotomy.

Therapeutics of Synanche, occurs the much quoted passage in regard to laryngotomy, which I would translate thus: "But those who, as a precaution against suffocation arising from synanche, cut the trachea for the dyspnea, do not seem to me to have shown by the attempt that the operation is warranted, for the heat of the inflammation becomes greater from the wound, and besides increases the dyspnea and the cough; but if they escape from this danger, the lips of the wound do not heal, for they are both cartilaginous and unsuitable." [Here the fragment of this chapter abruptly ends.] Now, if we remember that Aretæus supposed that the dyspnea arose, not from obstructive causes as we understand them, but from a disease of the "pneuma" or breath itself,* we may understand how irrational a procedure the opening of the air tube seemed, and we well know that in the worst cases which were the ones usually reserved for tracheotomy, even up to the time of the advent of intubation in our own day, the results, on account of the extension of the trouble below the trachea, fully justified Aretæus' skepticism. We have seen that Asclepiades approved of the operation, and we shall find Paulus Aegineta, several centuries later, describing the operation and attributing it to Antyllus. While, as we have seen, there is abundant evidence that the other chapters on diseases of the throat include reference to cases which were diphtheria, there is a special chapter devoted

Diphtheria.

* We may briefly define the pneuma as conceived by the ancients to be that part of the breath which contained the vital energy, but it would lead us too far astray to discuss all the various ramifications and forms and consequences of this idea, so necessary in some shape to any conception of the mystery we call life.

to a description "Of the Ulcers about the Tonsils," in which the disease is unmistakable. His description is very vivid, but as to the etiology he gropes in the dark, very much as men have done in all ages when seeking after the causes of phenomena. He says it occurs more frequently in children because they especially draw in deep and cold breaths; and there is more heat in them. They are greedy and hungry and their desires are capricious. They are petulant and do a great deal of bawling. It is common in girls until the beginning of the menses. It is especially common in Egypt and Syria on account of their diet and the dryness of the air. Hence they are called Egyptian or Syriac ulcers. We smile, but probably no more contemptuously than future historians will at our own ideas of etiology. They die he says from the foulness of the odors—from the ptomaines say we. In his symptomatology we miss only one characteristic, and that is the coughing up and the expectoration of the membrane, but this we find mentioned by Galen. His treatment included the use of escharotics and the cautery for the so-called ulcers. Various powders of an astringent nature were to be blown on them through a quill or a tube.* We hear little of massage and exercise from Aretæus; this therapeutical fad, like all fads, had had its day since the time of Asclepiades and of Celsus. We cannot part from Aretæus without quoting his description of the fatal termination of cases of these pestilential Syriac ulcers:

"The manner of death is most piteous; pain sharp and hot as from carbuncle; respiration bad, for their breath smells strongly of putrefaction, as they constantly inhale the same again into their chest; they are in so loathsome a state that they cannot endure the smell of themselves; countenance pale or livid; fever acute; thirst as if from fire, and yet they do not desire drink for fear of the pains it would occasion; for they become sick if it compress the tonsils, or if it return by the nostrils; and if they lie down they rise up again as not being able to endure the recumbent position; and, if they rise up, they are forced in their distress to lie down again; they mostly walk about erect, for in their inability to obtain relief they flee from rest, as if wishing to dispel one pain by another. Inspiration large, as desiring cold air for the purpose of refrigeration, but expiration small, for the ulceration, as if pro-

* Heymann credits Aretæus with being the first to make local applications to the larynx in this way, but it is found frequently mentioned in the Hindu writings. It is doubtful, however, if the powder ever got as far as the larynx. Without modern appliances and the laryngoscope, this is a difficult matter.

duced by burning, is inflamed by the heat of the respiration. Hoarseness, loss of speech supervene; and these symptoms hurry on from bad to worse, until suddenly falling to the ground they expire."*

Rufus of
Ephesus.

As in the case of Aretæus, a similar uncertainty as to the time and locality in which Rufus Ephesius lived, is to be noted in history. He evidently was anterior to Galen, who speaks of him as one of the recent writers, while he does not refer to Aretæus at all, who must have flourished about the same time. It is said that Rufus Ephesius lived during the reign of Trajan, which began in 98 A. D. He wrote much on anatomical subjects and quoted extensively from the works of others. His own work, or rather such of it as has remained to us, is of little value. I have extracted from it the following notices which pertain to our subject. He speaks of the tonsils† as four in number, two on each side of the pharynx (*σαρκώδη καὶ ἀδενώδη*) fleshy and gland like. We note thus

Adenoids

early the occurrence of the word "adenoid" applied to the structure of this tissue. Again, in the "Anatomy of the Parts of the Body," ascribed to the same author, occurs the following: "At the deepest portion of the tongue and at each side of this organ are arranged at its base excrescences called lateral glands of the isthmus to the number of six; they have a gland like structure. The form is rounded. They are moveable and easy to excise; they are attached by means of small membranes which hold them at the base. Four are to be seen at each side of the bottom of the mouth—two are less visible." We may conjecture there has here been some mutilation of the text. He noted they are more prominent when inflamed. He recognizes that the uvula is of little use and its amputation produces no alteration of function. As we shall see, in the description of the tonsils he is less accurate than Galen, but more in accord with modern teaching as to the uvula. Rhazes, an Arabian writer, quotes Rufus as saying: "In fracture of the nose it is well to fill the nostril completely with cotton (or silk) stuff, and not extract it until the nose has taken its shape."‡

Tracheotomy
of Antyllus.

Here is, perhaps, the place to introduce a quotation by Paulus Aegineta from the lost works of Antyllus, a surgeon of much note, who is said to have lived during the reign of Hadrian (117-138 A. D.). It is the first specific description of the technique of the operation of tracheotomy. I avail myself of the Sydenham

* I have here used the excellent translation of Adams.

† "Concerning the Names of the Parts of the Body;" Edit.: Daremberg, P. 64-65.

‡ Edit.: Daremberg, P. 471.

translation of Adams (Vol. II, P. 301). "The most famous surgeons have also described this operation (laryngotomy). Antyllus, therefore, says, "In cases of cynanche (as we will explain under the head of Dietetics) we entirely disapprove of this operation, because the incision is wholly unavailing when all the arteries (the whole of the trachea and bronchi) and the lungs are affected; but in inflammations about the mouth and palate and in cases of indurated tonsils, which obstruct the mouth of the windpipe, and the trachea is unaffected, it will be proper to have recourse to pharyngotomy in order to avoid the risk of suffocation. When, therefore, we engage in the operation we slit open a part of the *arteria aspera* (for it is dangerous to divide the whole) below the top of the windpipe, about the third or fourth ring. For this is a convenient situation, as being free of flesh, and because the vessels are placed at a distance from the part which is divided. Wherefore bending the patient's head backwards, so as to bring the windpipe better into view, we are to make a transverse incision between two of the rings, so that it may not be the cartilage which is divided, but the membrane connecting the cartilages. If one be more timid in operating, one may first stretch the skin with a hook and divide it, and then removing the vessels aside, if they come in the way, make the incision. These are the words of Antyllus." Now, by the phrase in parenthesis, "for it is dangerous to divide the whole," we are reminded of the passage I have cited from the Talmud. We may, therefore, entertain some conception of the antiquity of the operation of tracheotomy, though it is not mentioned in Pliny.

Cælius Aurelianus is another of the many medical writers whose epoch we can not definitely ascertain, though it is supposed he was a contemporary of Aretæus and of Galen. His barbarous Latin and his ignorance of Greek show that his knowledge of polite literature was limited, but his accurate description of disease, and especially his copious citations of earlier writers whose books have perished, make his works important in the history of medicine. He describes very vividly the symptoms of acute throat inflammation*, which he calls synanche, and he includes under this head everything of the kind. His treatment does not differ materially from that of Aretæus. He was very fond of the use of oil both as a menstruum for gargles and for the inunction of the whole body, when he used it warm in severe cases. He disapproved of the practice recommended by Hippocrates and his

Cælius
Aurelianus.

* "De Acutis Morbis," Lib. III, Cap. I, II, III, IV.

followers, of bleeding from the veins beneath the tongue in synanche, saying it did harm rather than good. He notes Hippocrates suggestion of passing a tube along the tongue into the pharynx (or larynx?) for the relief of dyspnea. He strongly condemned the practice which he says Asclepiades falsely ascribed to the older writers of opening the trachea. He says the report is an invention of Asclepiades, that it is rash and dangerous, and it would be a crime to perform it.* Nevertheless, we have seen that Antyllus, who must have lived about the same time, carefully describing it, according to Paulus Aegineta. Aurelianus has a chapter on hoarseness† arising from colds and shouting, and notices the diseased uvula as the cause of chronic coughs; he has also a chapter on coryza.‡

GALEN.

Gibbon begins his immortal work, "The Decline and Fall of the Roman Empire," with the sentence: "In the second century of the Christian era the Empire of Rome comprehended the fairest part of the earth and the most civilized portion of mankind. * * * If a man were called to fix the period in the history of the world during which the condition of the human race was most happy and prosperous, he would, without hesitation, name that which elapsed from the death of Domitian (96 A.D.) to the accession of Commodus" (180 A.D.). It was in this epoch, at the culmination of the mightiest empire that the world has ever seen, that Claudius Galen lived. It was under Trajan (98-117 A.D.) the empire reached its greatest territorial extent§, and in the following reign of Hadrian (131 A.D.) Galen was born. With many vicissitudes of favor and exile he practiced at Rome and elsewhere. His early life was passed under the beneficent reign of Antoninus Pius, and that of the great Marcus Aurelius, whose friendship he is said to have enjoyed, but in his last days he must have witnessed the disgraceful scenes which marked the reign of the brutal and licentious gladiator Commodus, to whom he was physician in ordinary, and those of his impotent and infamous successors, when mighty Rome had already begun to totter towards the long delayed collapse of its wide spread power. Hence it is that after Galen we are to

* "De Morbis Acutis," III, IV.

† "De Morbis Chronicis," II, VI.

‡ "De Morbis Chronicis," II, VII, VIII. For a more complete review of the work of Caelius Aurelianus, especially in regard to diphtheria and angina, *vid. Munch. Med. Woch.*, October 17, 1899, No. 42.

§ Freeman: "Chief Periods of European History."

meet no great work in medicine, which marks its material progress, for more than a thousand years. So intimately are all the forces of civilization interrelated and interdependent that the history of no one division can be intelligently followed without the sidelight which other parts throw upon it.

We see in Galen the culmination of the medical progress of the ancient world, and in the light he transmitted the new world, when it first began to emerge from the chaos of Rome's destruction, made its first feeble move towards a renewed growth in the development of medical knowledge.* I have several times had occasion to anticipate in this history the account of some of Galen's views, and it is not necessary here to review these. I have also had occasion to animadvert upon the great advance of the anatomical knowledge of the upper air passages displayed in the works of Galen, beyond that to be found in the works of his predecessors. It needs very little perusal of them to convince one of the enormous strides made in the anatomy of the human body since the days of Hippocrates, five or six hundred years earlier. From Celsus, one hundred years his senior, and from Aretæus, perhaps his contemporary, we can derive only slight information as to the anatomical and physiological knowledge they possessed. They were evidently men of commanding talent, but their works which have been preserved are too meagre for us to form much of an idea of their fundamental knowledge of the human body and its functions. It is in Galen's writings, therefore, that we first gain an idea of the advance made in those departments of medicine by the Alexandrian School of Anatomists. It is significant of the influence exerted by the great libraries of Pergamos and Alexandria that the birth and early education of Galen is accredited to the former city, and that he acquired at least some of his knowledge in the latter.† It would have been manifestly impossible for any one man to have himself originated the discovery of one-tenth part of the new anatomical facts we meet with in Galen for the first time, although he doubtless is the

The Anatomy
of Galen.

* It is true that for seven hundred years his works were not read in Europe, but after Gregory destroyed the library on the Capitoline, that might be said of every other medical writer of merit. Under the Eastern Empire, during this time he was confessedly or secretly, with Pliny, the origin of all medical knowledge, but the first translations of Galen from Greek into Arabic, and hence into Latin, are in the eleventh and twelfth centuries, while direct translations from Greek to Latin did not take place until the fourteenth century.

† If, as it appears probable, Galen was not acquainted with the dissection of the human body, it would seem to follow that the practice of the Alexandrian School in the time of Erasistratus and Herophilus had not persisted to the time of Galen. This cessation, if it really took place, we may conjecture to have been due to the prevalence of indigenous Egyptian prejudice over the tendencies of Greek science.

real author of some of them, especially of those in regard to the larynx. Far inferior to the author of the best of the Hippocratic treatises in talent and in genius, but greatly surpassing him in accurate knowledge, Galen is contentious, prosaic and tiresome to the last degree. I would recommend that those who love to indulge in medical polemics should, as a punishment to fit the crime, be compelled to read seriatim the extant works of Claudius Galen. It is, however, to these very personal qualities we are indebted apparently not only for all the medical learning of his own times, but for very much which we possess of that which existed before his birth in the works of earlier writers. This it is which has raised the medical works of Galen above all others in importance to medical science, greater even than those of the school of Cos. Had the latter not come down to us in their own form, we would still have most of them reproduced either literally or in substance by Galen.

The Inter-
maxillary

Galen described an intermaxillary bone* in man. This apparent mistake was probably due to his observations on the skeletons of animals which he seems to have dissected much more frequently than man. It led many hundreds of years afterwards to a warm discussion between anatomists. Finally, in the last century, Vicq D'Azir and Goethe definitely settled the matter by showing that traces of this intermaxillary bone are found in the skulls of children and in the fetus. This was one of the forerunners of Darwinism, a discovery of one of the suggestive facts which, with Goethe's *Metamorphosis of Plants*, formed the germ of the doctrine of Evolution in the animal and vegetable world, and of the Spencerian philosophy. It is a striking instance of the necessity of a proper soil for the germination of any observation of nature. Had the old Greek and Roman civilization persisted a few centuries more, who can doubt but that the circulation of the blood|| would have been known a thousand years earlier, or that the enlightenment which has followed the promulgation of the doctrine of Evolution would have been similarly antedated. Galen fully recognizes the nose as the beginning of the respiratory tract.† He describes the muscles‡ of the external nose as two in number, one on each side,

* "De Usu Partium," XI, Cap. XX.

|| After a careful perusal of much of the writings of Galen I am unable to grasp thoroughly the idea he had of the circulation.

† "De Usu Partium," XI-II. I make use chiefly of Kühn's Edition.

‡ "De Dissectione Musculorum."

for the dilation of the nostrils, and he understood the distribution of the facial or hard part of the seventh pair of nerves to them.*

Galen's description of the internal nose in the "Instrumentum Odoratus," reads as follows: "The nose having a median dividing wall has two conspicuous openings, one for each nostril, and each one of them is divided in the upper part into two portions. One of these divisions leads to the mouth and the other one upwards so that it starts from the entrance and ascends to the brain itself. There are two hollow oblong off-shoots of these (it?) towards it (these?)† having their beginning from the anterior cavities, reaching to that part of the skull where the nose has its origin. At this point is the situation of the sieve-like bones (ethmoid), the function of which the name indicates, and the thick membrane (the dura mater) with which that of the bones is continuous, is pierced by fine openings. Through these first the thicker parts of the excretions from the brain are transmitted (the custom was started by Aristotle of calling such things excretions), for things more vaporos mount to the sutures and escape from it. The thick part of these, such as phlegm in coryza, is carried downward, having first passed through the dura mater. After having been strained through the sieve-like bones, it thus passes into the channels of the nose. There is a part runs into the openings of those channels heretofore mentioned which lead into the mouth itself; and the mucus, especially such as is viscid, part of it falling at one end into the channels leading into the mouth, the other part into the passages on both sides which lead outwardly, is blown forcibly from the nostrils and is hawked out through the mouth. A bloodless (sic) membrane, thicker than the skin, lines those straight passages of the nose leading up to the sieve-like bones, and likewise those other oblique channels which I have said end in the mouth. This membrane is continuous with that lining the circumference of the whole mouth, and covering the tongue, and in addition to these the pharynx, the larynx, the trachea and the esophagus. To this membrane, which is one from the beginning and continuous, and in all the parts mentioned has the appearance of the same substance, but has not the same thickness in all parts, certain small nerves are distributed, springing from the

Nasal
Anatomy.

* "De Usu Partium," Lib. XVI, 3.

† Kühn's Greek text, from which I translate, does not seem to me to warrant the Latin construction which accompanies it. Neither the text nor the translation of Kühn are here felicitous. We must imagine that the text itself has been mutilated by ignorant and careless copyists, but Kühn's translation in making use of an unwarranted construction does not thereby elucidate the anatomical description.

brain, except those to the tongue." This idea of the brain as the origin of the secretions of the mucous membranes of the respiratory and digestive tracts, as has been said, was due to the ignorance of the existence of the muciparous glands and to the absolute mental necessity of finding some explanation for the presence of the mucus. As we have seen, the idea is found in the Hippocratic writings and it persisted for two thousand years in medical belief. The eyes and ears were also supposed to void their secretions through the lachrymal sac and the Eustachian tubes into the nose. He describes the trigeminus nerve* as sending filaments to the mucous membrane of the nose and palate. In order to show how closely, in spite of the gross errors as to the internal anatomy of the nose, Galen's physiology corresponded with what is orthodox doctrine in laryngology to-day, I quote from another work of Galen.† Although the first sentence or two has now become obsolete, the rest seems as though it might have been taken from a modern text-book of the nose and throat: "It has been said concerning the uvula, in the commentary concerning the voice, that it contributes to the strength and beauty of the latter, and both in an admirable manner, since the entering air first is divided by it and the force of its current is broken, and thereby that of its frigidity, so that some of those who amputate it at its base not only clearly injure the voice, but the increased coldness of the inspiration is felt, and many breathing this into the lungs and the thorax are thereby killed, so that it is not right to cut it off rashly, nor as chance would have it, but to leave some part of it at the base." "It has been stated before in regard to the perforations within the nostrils, how wonderfully the bone situated in front of the ventricles of the brain receives them, being similar to a sponge, and in regard to the passage of these into the mouth which is in the palate, how it is arranged that the beginning of the inspiration is not directly into the trachea, but there is a certain deflection of it, as a curve, before the breath arrives in the trachea, which arrangement it seems to me has a two-fold advantage; first, because the air surrounding us is at times quite cold and the lungs then would be chilled; and, secondly, because small particles of dust or of ashes or anything of this kind may not fall into the trachea. In this bend, indeed, the breath may be carried further, but small particles of this kind are arrested so that they first, at this turn, fall upon soft and wet surfaces which are somewhat mucilaginous and

The Functions
of the Nose.

* "De Usu Partium," IX, 15.

† "De Usu Partium," XI, 11.

are thus able to retain those which fall. If any get as far as the mouth, they stick to the palate and uvula. An exemplification of this is what daily happens to those who wrestle in much dust, as well as to those who are on a dusty journey. In a little while they blow dust from their nostrils or spit it out; but unless the channels of the nostrils were first directed straight up in the head, and thence obliquely backward to the palate, and unless the uvula were there, it is evident that nothing would prevent everything falling into the trachea, for this sometimes happens when one breathes by the mouth. I have even seen many athletes beaten in this very way, because the dust being breathed in by the mouth, they are nearly suffocated. When, indeed, any inflammation or tumor is present or any other affection obstructing the nose, then they are compelled to breathe through the mouth; from which thing it is possible to know that the nose is first in order as an organ of respiration, while the mouth, if nothing affects the animal, is in no way the organ of respiration, but in certain cases mentioned is an aid to respiration, which all directly points to the fact, which I have urged at the beginning of every disquisition, that our Maker formed all these things with one end of His work in view."

Galen's book upon "The Formation of the Voice" has been The Voice. lost. Doubtless, had this been preserved, we would have been able to find much of interest in it. As it is, we read much concerning the external muscles of the neck,* and we learn that he distinguished twelve intralaryngeal muscles, *i. e.*, six pairs.† He described the cartilages of the larynx as three in number, the thyroid, the cricoid and the arytenoid. He supposed the latter was a single cartilage. We have seen how Aristotle described the anatomy of the trachea. For him it was made up of entire cartilaginous rings superimposed one on the other; but Galen knew better, describing the membranous portion behind and recognizing its function‡ of facilitating deglutition.§

He is somewhat confused in his description of the production of the voice, at least in the books which have remained to us; but it seems as near as possible to the proper explanation in an age when the vibratory movements of the air as well as its other physical properties were so imperfectly understood. He claims to have been the first to discover and describe the ventricles of the larynx, and

* "De Usu Partium," VII, Cap. 17, et seq.

† "De Dissectione Musculorum."

‡ "De Usu Partium," XII. 3.

§ "De Dissectione Musc."

he well understood that the glottis was the point at which the voice was produced, likening it to an ancient flute. He describes the vocal cords as a membranous substance so constituted to resist the impact of the air and lubricated by mucus to prevent injury from the vibrations of a dry surface.* "For it is pointed out there ("The Formation of the Voice") both that the trachea prepares and prearranges the voice for the larynx, and it being arrived there, they (the cartilages) increase it, and it is still further augmented by the vault of the throat which acts like a sounding board, the palate like a plectrum." (I. c. VII, 5).

He reproves those who think the voice is sent forth by the heart, but declares that the larynx is the instrument of the voice.† He corrects Erasistratus‡ for saying that the pulmonary vein, like the bronchi, is free of blood; the latter, he says, contains blood only when there is a tear, or an anastomosis with a blood vessel, when it mounts to the pharynx and is voided.

We have seen that Galen, in a very qualified manner, was inclined to share the belief of his predecessors that fluids when swallowed passed at least to some extent into the lungs, and he seems to have believed that it is possible, by allowing medicaments to slowly melt in the mouth and by restraining the inclination to cough, for some of the material to find its way into the larynx and thus benefit those suffering from affections of that organ, which he often noted in actors, singers, etc.‖ The drugs he commended for these troches are much the same as we use to-day. This was a favorite method of medication with Asclepiades. Perhaps it was for this reason that Galen declared that ulcers of the windpipe are easily cured. His explanation of speech was couched in almost the same words as that of Aristotle, saying that the voice produces vowels and the tongue, nares, lips and teeth form the consonants.§

He seems to have appreciated the identity of the lymph glands in the neck with those of other localities, for he says: "There are around the pharynx and larynx certain glands similar to those in the mesentery, but these latter are small, and on this account are not commonly recognized, but those around the fauces and larynx are large and prominent."¶ This, of course, could only have been

* "De Usu Partium," VII, 13.

† "Placitis Platon. et Hippocratii," II, 5.

‡ "Usu Partium," VII, 3.

‖ "De Compositione Medicament."

§ "De Locis Affectis," IV, 9.

¶ "De Aliment Facultat," III, 6.

learned by careful dissection, and from the context we may imagine that he confused pathological with physiological conditions.

Galen* quotes Marinus as saying: "The use of all the glands is two-fold; (1) for they either support the deep vessels which are accustomed to be suddenly swelled (?) and undergo the dangers of divulsion on account of more rapid movements; (2) or they are able to moisten by the generation of humors the parts which are in need of viscid and wide-spread lubrication, lest easily becoming dry they may be unfit for motion. (And as for the other kind of glands which reinforce the vessels whose function it is to open (?) we will leave that for the time, as we have no use for it in this place.)"

Elsewhere Galen† explains "that since the glands, which fill what space there is in the midst of vessels distributed to various parts, act as a foundation or support for this distribution, they are of no very great use to living beings, but nature out of its abounding provision has formed these glands as it has many other things."

Galen‡ reference to glands around the larynx and pharynx similar to those of the mesentery, may mean the thyroid and the tonsils. He refers in the same manner here to glands as elsewhere. This, quoted by Morgani§, I am able to find in Kühn's Galen. "Galen, or whoever is the author of the book, "De Voce and Anhelitu," says: "The neck, however, has two glands in which humidity is generated. But from these two glands which are in the neck veins are not given off in which the humor runs as in those which come from the glands of the tongue." Evidently the thyroid gland.

He vaunts his discoveries in the larynx thus: "Attend, therefore, especially to this exposition which I have in hand, because I was the first to discover it. None of the anatomists have hitherto known anything of these nerves (the recurrents), nor of those things hitherto mentioned concerning the structure of the larynx. Therefore, having turned your attention to that which is most to be respected, and having become a pupil worthy of the instruction about to be imparted, listen to the exposition setting forth a most wonderful phenomenon of nature."|| This wonderful arrangement

The Recurrent
Nerves.

* "De Semine." Lib. II.

† "De Method Medendi," XIV, Cap. XI.

‡ "De Alimentorum Facultatibus," Lib. III, Cap. VI.

§ Morgani: "Adversaria Anatom," I, 26.

|| "De Usu Partium," VII, 14. For a discussion of this subject, with an interesting account of a modern theory, see *The Lancet*, January 21, 1893.

was the reflection of the recurrent laryngeal nerves around the vessels of the thorax; but when he proceeds to explain it on the principle of the pulley, so that they may approach the laryngeal muscles from below, his solemnity and impressiveness in preparing the wondering pupils for the great secret seems a trifle ludicrous to modern readers. However, no one has really ever succeeded any better in attempting to explain this anatomical phenomenon, though there have been many theories advanced since the days of Galen.

Elsewhere* he again claims that he was the first to discover and give a name to the recurrent nerves, those only being known to his preceptors which were near the arteries (pneumogastrics). In several places he makes the statement that chilling of the recurrent nerves during operations damages the voice, and he, therefore, advised against operations in this region during cold weather. He relates the case of a boy who was operated on for a struma, which was removed by evulsion, causing aphonia, due to injury of the recurrent nerves. In this connection it may be well to mention a belief of the old Greek philosophers, the origin of which Galen, in confuting with much prolixity, ascribes to Zeno, the Stoic, it having been transmitted by Diogenes Babylonius and subsequently taught by Chrysippus.† Cicero‡ expresses it thus: "The trachea reaches from the lungs to the back part of the mouth through which the voice, taking its beginning from the mind, is perceived and has its origin." Galen says the Stoics reasoned thus: "It is evident the voice cometh from the mind. It is also evident it cometh from the larynx. Hence the mind is not in the brain." Galen demolishes this sophism thus: "They will wonder when they hear the voice is produced from the brain, and much more after having heard that all voluntary motion is performed by the muscles. * * * For the muscles move certain parts upon which the breathing and the voice depend, and they themselves in their turn are dependent on the nerves from the the brain. If you surround any one of these with a ligature, or if you cut it, you will render the muscle to which it is distributed motionless, as well as the limb of the animal which has moved before the nerve was cut." Another evidence of Galen's familiarity

* "De Locis Affect," I. 6. According to Baas, Marinus (100 A. D.) discovered the inferior laryngeal nerves. He gives no reference.

† *Vid.* Galen: "De Placitis Platon. et Hippocrat.," Lib. II.

‡ "De Natura Deorum," II, 59: *Primum enim a pulmonibus arteria usque ad os intimum pertinet, per quam vox principium a mente ducens percipitur et funditur.*

with experimentation on animals in elucidating the function of the laryngeal nerves is to be found further on in the same chapter: "The bones being removed from the brain, or its ventricles in some manner compressed, immediately there is not only no voice or breathing, but the animal is at once deprived of all sensation and of all motion during the compression."

Galen adopted Hippocrates' idea, and thought health resulted from the proper equilibrium of the four humors, the temperaments so called, resulting from the preponderance of one or more humors. He applied the four qualities to the four elements thus:

Humoral
Pathology.

Water	Cold and wet.
Earth	Cold and dry.
Air	Warm and wet.
Fire	Warm and dry.

He applied to the humors the theory of the elements. Every disease is engendered by one of the humors or several combined. "The phlegm is an imperfect blood which may become true blood by the action of the natural heat of the body. In the phlegm water is abundant. It is cold and wet like water. It nourishes the brain and all cold and wet parts. It tempers the blood and aids the movements of the articulations." We thus see it has directly to do with the mucous and serous membranes. In its other ramifications the description of the applications of this doctrine is prolix and fatiguing. Its adoption tended to suppress originality of thought, just as any system always does.

I have detailed at considerable length the indications of the anatomical and physiological knowledge which Galen possessed of the upper air passages, not only because in his work we first meet with any considerable notice of such knowledge, but because this knowledge formed the basis upon which rested for more than a thousand years the superstructure of theory and practice, until, indeed, it received from Vesalius and his followers a rational criticism, and eventually a refutation of his doctrines of pathology. The abolition of the latter by the physicians of the Renaissance and later, was a boon to suffering humanity. It was one of the many fetters which bound the human intellect—may we never see its like.

As to other passages of interest concerning the nose and throat in the works of Galen, those treating of their diseases need not detain us long.

We have seen the defects in Galen's knowledge of the anatomy and physiology of the nose, and hence we need not be surprised

Anosmia.

that he instances obstructive anosmia as a condition in which the air may pass through the cribiform plate to the brain without the odor—the particles of the latter being too large to pass through the perforations in the membrane lining the cribiform plate.*

As a further illustration of the supposed entrance of the air or rather of the "pneuma" into the brain, he instances the case of a man who after forcible inhalation of an irritating substance into the nose, suffered acutely with headache referred to the frontal region.†

Polypi and
Ozena.

Galen seems to have divided diseases of the nose into two classes, polypi and ozena—corresponding, perhaps, to the modern classification of hypertrophic rhinitis, including edematous hypertrophy and polypi, and atrophic rhinitis including possibly syphilis, if it then existed. Elsewhere, however, among the Definitions (No. 371), he states that ozena is a deep ulceration in the nostrils, emitting a breath of a bad odor, and says: "Sarcoma is the unnatural growth of flesh within the nostrils. Indeed, a polyp is a kind of sarcoma. * * A sarcoma differs from a polyp in size and structure." His differentiation of nasal disease was, of course, very faulty. He gives a very large number of prescriptions, both of his own and others, for the so-called ozena and polypi, but his therapy for these affections is decidedly inferior to that of Celsus. There is no reference made to Hippocrates' method of removing nasal polypi. Considerable attention is given to epistaxis as a symptom of various general diseases, but not as much stress is laid upon this point as in the Hippocratic treatises. He, as did his predecessors, recognized the dependence of diseases of the larynx upon affections of the parts above, but they explained this by the assumption that the brain was the common origin of all catarrhs. We find in Galen abundant evidence of the influence of what I have called Chaldean medicine, the excrement of men and animals being freely used in throat inflammations. Bleeding from beneath the tongue was also a favorite remedy in all affections of the pharynx and larynx.

Varieties of
Kynanche.

We have seen how Celsus and Aretæus subdivided inflammations of the throat into Kynanche and Synanche. Galen refers‡ to the book of Prognostics of Hippocrates to prove that all these inflammations were at first called Kynanche. Galen himself, while not disposed to increase the number of names, divides throat inflam-

* "De Usu Partium," VIII, 6.

† "Instrumentum Odoratus."

‡ "De Locis Affectis," IV, 6.

mations into five varieties. First, inflammation of the fauces. Second, difficulty of breathing with no inflammation of the fauces or swelling of the external parts. Third, when the region of the fauces externally is inflamed. Fourth, when the fauces internally and externally are inflamed. This all seems very nonsensical, but we must remember the influence of the school of Pneumatists. Although Galen supplanted all schools, he was by no means himself free from the influence of many of their theories. Fifth, in both Galen and Hippocrates there is a description of a throat affection which Galen explained as a dislocation of the odontoid process of the axis vertebra. I am entirely at a loss to identify this affection, unless it was a post pharyngeal abscess. They both speak of it as an affection more or less commonly met with, and Galen created a fifth class for it.

If any doubts have arisen as to the correctness of the assumption that diphtheria was known to earlier writers, the following passage from Galen should set the matter at rest. It occurs incidentally in Galen's treatise on therapeutics.* "For thus the youth having an ulcer of the pestilential disease in the trachea regained his health, and others in the same manner after him. In another youth, about eighteen years old, a cold having gone on for many days, a little fluid blood came up after a cough—not much—but after this he coughed up some part of the membrane itself, which, having remained behind in the trachea, came up through the larynx into the pharynx and mouth. It seemed to me from the apparent thickness of it and from the patient's sensations, it came from the body of the larynx. Thenceforth the man's voice was injured, and this for some time, but he eventually recovered."

Diphtheria.

Thus far in making citations from the works of Galen I have refrained from quoting from "Iatros, or The Surgeon," a book usually included in the more authentic works of Galen. While the latter may have written the introductory parts, nothing can be more certain than that he is not responsible for the body of the work. Evidently it is the work of another and a much inferior hand. It is full of anatomical and physiological errors which Galen himself in his other works has refuted or shown that he did not share. Galen's great familiarity with Hippocrates would have prevented him from making the statement we find in the "Iatros" that if the nasal bones are broken they cannot be straightened. Galen in his "Commentaries on the Hippocratic Treatises," dealing with this subject, shows his perfect familiarity with the treatment of such

Iatros.

* "De Methodo Medendi," Lib. V, Cap. 12.

cases.* We find also that the author, whoever he was, made the same distinction between kynanche and synanche as did Celsus and Aretæus, a distinction which Galen, as we have seen, distinctly repudiates. He agrees with Galen in attributing great importance to the epiglottis as a protection to the larynx, but he fails to add any precept of caution to his mention of the operation of amputation of the uvula to which Galen attached such necessary physiological functions. He speaks of the tonsils as four in number, one at each side of the fauces, and one at each side of the base of the tongue, this being the first mention of the lingual tonsil. He used a sharp, narrow spatula to separate nasal polypi from the bone, and afterwards shaved off the roots with a sharp knife. It is in this book that the assertion is positively made that Asclepiades actually performed laryngotomy in extreme cases of dyspnea, but there is no comment with the statement.

* Also in the "De Fascibus:" In the Basel Edition of Galen, 1561, Vol. VI, p. 591, et seq., may be found a number of woodcuts illustrating in the most graphic manner the methods Galen describes for nasal bandaging, including those suggested by Hippocrates, Phalera and Amyntas.

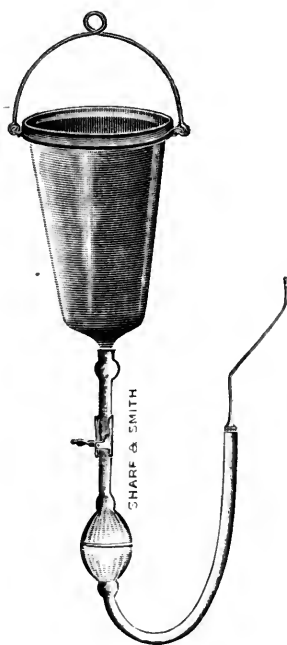
TREATMENT OF CERTAIN PURULENT CONDITIONS OF THE ANTRUM OF HIGHMORE THROUGH THE NATURAL OPENINGS.*

BY NORVAL H. PIERCE, M.D., CHICAGO.

The subject of this paper was chosen, first, because it is apparent that the ostium and accessory openings into the antrum of Highmore have not been used with the frequency they should be in the diagnosis and treatment of empyema; second, in order to make public the excellent results the writer has achieved in the treatment of certain purulent conditions of the sinus maxillare through the natural openings. Before proceeding to the chief part of this essay, it may not be amiss to take advantage of this excellent anatomical preparation from Dr. John W. Murphy's interesting collection, to make a few prefatory remarks on the parts involved. The hiatus semilunaris lies in the middle meatus. In order to see this, we raise the middle turbinated body and now we behold a rounded eminence, the bull ethmoidalis, which contains the aperture of the middle ethmoidal cells. Below this is the infundibulum which we may trace upwards and forwards to the opening of the frontal sinus. Its lower extremity leads to the sinus maxillare, which receives the openings of the anterior ethmoidal cells and the ostium maxillare. The form and size of the ostium maxillare varies greatly. Most frequently it is an elliptical slit; it may be round or kidney shaped. The smallest ostium Zuckerkandl has seen had a diameter of 3mm., the largest 19mm. It was absent in only two of his enormous collection of skulls. Beneath this is found what Zuckerkandl denominates the accessory openings into the maxillary sinus. These accessory openings are pictured also in Henle's "Handbuch der Anatomie" and in Cruveilhier's and Sappy's anatomical works. They usually occur bilaterally and they may be placed in any position in the middle meatus, but they are most frequently found in the regions of the hiatus semilunaris; they are oval or round in form with sharply cut edges and vary in size from a millet grain to a lentil; occasionally they are still larger. Giraldis believes that these openings are the result of pathological processes because they are not found in young

* Read before the Western Ophthalmologic and Oto-Laryngological Association, Cincinnati, April 11, 1901.

individuals. Zuckerkandl confirms this view inasmuch as he has observed rarefaction of the mucous membrane at points corresponding to these accessory openings. The importance of a knowledge of the existence of these openings must be clear to all who have to do with the treatment of disease of the maxillary sinus. According to Zuckerkandl these openings were found in 10 per cent of heads which he examined in his anatomical investigations. Hartmann believes that these openings are found more



frequently in persons suffering from sinusitis. We can see how readily the ostium in the specimen which I hold in my hand may be reached by passing a properly bent probe through the anterior nares along the middle meatus. In washing out the sinus I use Moritz Schmidt's canula; this is attached to a bulb syringe which in turn is connected with a gallon percolator jar. The apparatus may be held by an assistant during the process of irrigation or may be suspended by an iron standard at the level of the patient's

head. The amount of force of the current is regulated by pressure on the bulb of the syringe. It is unnecessary to say that a solution of cocaine and suprarenal capsule is used in order to contract and anesthetize the parts. It is best applied by means of a cotton carrier, the point of which is bent so as to enter well into the sulcus. Causes which preclude catheterization of the ostium maxillare are: narrow nasal chambers, deviations and spurs of the septum, polypi, hypertrophies, localized hyperplasia, synechia, osteophytes about the region of the hiatus and an inaccessible ostium. During introduction of the canula the patient's head is inclined somewhat backward. When the canula is in place the patient's head is bent forward in the median line and the solution from the nose is received in a receptacle held beneath the patient's chin. The canula is introduced under illumination with crook directed upward. When the point arrives opposite to the middle of the middle turbinated body, the instrument is gently insinuated into the middle meatus, and the opening into the antrum felt for. When the instrument passes into the ostium or an accessory opening, sight and touch make us aware of the fact. It is my experience that in many cases of antral disease the ostium or an accessory opening may be found without the aid of vision as easily as the opening of the Eustachian tube. With the aid of illumination and anterior rhinoscopy the procedure becomes much easier. Exploration of the ostium maxillare is by no means a recent device. The dentist, Jourdin, in 1765, employed this method to ascertain the patulane of the ostium without illumination, depending entirely on the sense of touch. When the canula is in the sinus we have the choice between aspiration, inflation and rinsing the cavity. In the diagnosis of antral disease all of these procedures may be of value, but the latter procedure is the most important inasmuch as the exudate may be small in quantity or very thick and only appear in the washing. All fluids used in washing should be sterile and bland. For diagnostic purposes sterilized Thiersch's solution is the most acceptable. We will frequently observe, after such a washing, the entire disappearance of the symptoms of an acute empyema or they will be greatly diminished. Solutions which I have used in the treatment of maxillary sinusitis are: Thiersch's solution, solution of bicarbonate of soda, 2.5 per cent carbolic acid solution, saturated solution of boracic acid, aceto-tartrate of aluminum, (one ounce of the saturated aqueous solution to two quarts of sterilized water). It is needless to say that these irrigations can be curative only in un-

complicated empyemas, though cases of dental origin have been reported where healing has taken place notwithstanding the fact that the suspicious tooth remained. It is necessary in all cases to exclude all hindrances to healing, such as empyemas of neighboring sinuses, especially that of the frontal and ethmoidal. Polypi and hyperplasias or diseased teeth should receive the necessary attention.

One disadvantage of this method of treating disease of the maxillary antrum is that it necessitates a visit from or to the physician every time the antrum is irrigated. Very rarely do we find a patient who can find the opening himself, though I have seen such an instance. In most acute and in many chronic inflammations, however, the diseased conditions are overcome after surprisingly few treatments. The following cases will illustrate the results obtained :

Case I.—M. R., male, banker, æt. thirty-nine, sanguinous nervous temperament, was seized with a fever, rhinitis and pains in the head three days before I saw him. At the time he consulted me his temperature was 101.3° F., the pain was localized to the right side of the face and he was in a highly nervous state from loss of sleep. He complained of sensitiveness of the upper teeth on the right side. The discharge was muco-purulent and much more profuse on the right side. Transillumination gave a marked right infraorbital shadow. The mucosa of the nose was greatly swollen. After thorough cocaineization, muco-pus could be seen coming from the region of the hiatus. The canula was introduced with ease into an accessory opening. Purulent mucus in abundance came away in the Tiersch's solution, followed by clumps of thick brownish material. The patient experienced immediate relief and that night slept well for the first time since the beginning of the attack. Irrigations were continued daily, and the solution came away perfectly clear after the fifth treatment.

Case II.—A medical student, male, æt. twenty-three, had attack of gripe beginning ten days before I saw him. Temperature ranged during this time from 100 to 102.5° F. He suffered from severe pain in the frontal and temporal regions, photophobia, lachrymation and great depression. There was profuse discharge from both sides which possessed a disagreeable odor. Both cheeks were slightly edematous, and pressure over them elicited expressions of pain. The patient gave a history of a similar attack about a year before. After application of suprarenal capsule and cocaine, both antra were irrigated through natural openings. Muco-pus came

away from both. Headache, lachrymation, photophobia were relieved almost immediately. The distressing discharge which with the headache had kept the patient awake was lessened so that he slept. His recovery was continuous and at the end of six days complete. About two weeks later he came to my office complaining of slight tenderness over the left antrum and increase of discharge from that side, which seemed to have an odor. Irrigation revealed a small quantity of thick yellowish pus, which disappeared after the tenth irrigation. It is not unusual to observe relapses in these cases. Indeed, it is probable that in many cases the acute inflammation is but an accentuation of a subacute or chronic process of so slight a character as to produce little or no disorder.

Case III.—S. K., female, married, æt. twenty-nine, complained of discharge and offensive odor from nose. The discharge was especially annoying at night as it ran back into the throat and caused cough; she suffered from recurrent attacks of neuralgic pain in the right side of face. Inspection revealed slight atrophy of both inferior turbinated bodies and the presence of thick muco-pus in both chambers. Transillumination gave right infraorbital shadow, cannulization slightly difficult. Irrigation brought away about two drachms of thick yellowish matter. Iodo-glycerine with vibratory massage applied to the mucosa of the nose. Patient employed irrigation by means of gravity douche twice daily at home. The nasal symptoms improved immediately. After about a month the solutions used in irrigations of the antrum came away perfectly clear. The discharge from the nose was reduced to a minimum. The neuralgic pains and odor had disappeared, and the patient's appearance and general health had greatly improved. Probably in many cases of antral disease the absorption of septic material by the mucosa of the antrum causes a low grade of pyemic poisoning.

Case IV.—B. K., merchant, æt. thirty-eight, married, complained of discharge into throat at night which awakened him and caused cough; he had similar attacks several times in past winter. Examination revealed tenacious muco-pus in the left middle meatus which during removal adhered to region of hiatus. Left infraorbital shadow on transillumination. Irrigation through opening in middle meatus revealed muco-pus. Operation was advised but refused. The irrigations through the natural openings were carried on daily for three months, at which time the solution came away perfectly clear. He was kept under observation for six months without relapse occurring. Here we have a chronic sinusitis cured by irrigation through the natural opening. Relapses, however, are common.

Therefore the patient should be kept under observation for a long time. Cases might be multiplied but that is unnecessary for our purpose, above quotations from my records being sufficient to show what may be done. It should be understood that not all cases may be treated through the natural openings, and that not all cases which may be reached through such openings will recover without further surgical interference.

In conclusion, I would say:

1. That there is strong evidence to warrant the belief that in diseased antra accessory openings are more frequently found than in healthy antra.
 2. That in a certain number of cases the ostium may be used to irrigate the antrum.
 3. That we should in all cases, whether for diagnosis or treatment, try for the ostium or accessory openings before resorting to surgical puncture, whether through the inferior or middle meatus, the canine fossa or alveolar process.
 4. That it is of no importance whether the opening through which we irrigate be the ostium or an accessory opening.
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REMARKS ON THE DIAGNOSIS OF ADENOIDS IN INFANCY.

BY WALTER F. CHAPPELL, M.D., M.R.C.S., ENG., NEW YORK.

In most infantile affections it may be conservatively stated that the diagnosis is more difficult and uncertain than at any later period of life.

I am fully aware that the subject of adenoids has frequently received your attention, and I do not expect to present anything new to a society whose members are specially skilled in these ailments. Nevertheless, I venture to relate my observations, believing that your discussion will awaken new interest and prove most instructive.

In a general way we can divide the diagnostic symptoms into objective and subjective. The objective symptoms are peculiar facial expression, mouth breathing, snoring at night and noisy respiration during the day, vocal changes, abnormal and excessive nasal secretions, sneezing and reflex neuroses, chest deformities and spinal curvatures. The subjective symptoms are headaches, stuffy feeling in the nose, dryness of mouth and throat, especially in the mornings, and sore throat, impairment of the taste, inability to concentrate attention, with more or less stupidity and depression, earaches, deafness and tinnitus.

It seems unnecessary to consider in detail all these symptoms. I choose rather to take the negative side and show that of the symptoms enumerated, mouth-breathing and snoring may exist without adenoids being responsible; and also that adenoids may be present without causing any obstructive disturbance in the upper-air tract.

For expediency and clearness the age of three years and under will be taken as the period of infancy, and a further division will be made of those infants over six months, and those of six months and under.

The reason for making this division is that in early life some affections exist which a few months later either change their character or entirely disappear. Special difficulties also surround our methods of diagnosis at this early period, as, owing to the position of the soft palate and the small diameters of the naso-pharynx, it is impossible to make either a digital or posterior rhinoscopic examination.

Two of our most important aids are, therefore, rendered unavailable, and it is surprising that so many have been willing to make a diagnosis of adenoids without more positive evidence. During a recent examination of four hundred and thirty-seven infants under three years of age, forty-five were found under seven months old who had some nasal obstruction, but in no child under three months was the obstruction due to lymphoid hypertrophy in the naso-pharynx. In fact, in my experience I have been unable to demonstrate to my satisfaction the presence of adenoids in so young an infant. Occasionally I have thought I had a case, but was disappointed to find that no appreciable amount of lymphoid tissue could be removed. Since I began to doubt the theory of congenital adenoids I have employed an ear curette as a means of diagnosis in all suspected cases with negative results.

I might say at this point that until about two years ago no adenoid instruments could be obtained small enough to use in the post-nasal space of infants, and as the index finger is too large, I have been curious to know what means were adopted in those cases selected for operation. I have investigated the literature of congenital adenoids and find that most writers treat it indefinitely, stating usually in a brief way the probability of their presence at birth, but no author, so far as I am able to find, relates any definite personal experience.

Hall, in his work on the "Throat and Nose," says that adenoids would seem in some rare instances to be congenital, but that no dissections of new-born infants had confirmed this theory. Some years ago I made a number of post-mortem examinations on new-born infants, but found no case of adenoids. I think, therefore, the evidence is rather against the congenital theory, and, if true, this is an important point to be remembered in determining the cause of noisy and obstructive respiration.

The following conditions may cause respiratory obstruction simulating that caused by adenoids in the naso-pharynx of infants under six months:

- 1st. Lymphatism and lithemia.
- 2d. Syphilitic or gonorrheal rhinitis.
- 3d. Congenital atelectasis.
- 4th. Digestive disturbances.
- 5th. Congenital highly arched palate.
- 6th. Very small or occluded nostril or nasal passages.
- 7th. Unusually small post-nasal space with large Eustachian eminences.

sth. Marked anterior projection of the bodies of the cervical vertebræ.

qth. Some malformations of the soft palate.

roth. Hypertrophy of the tongue.

Some of the conditions enumerated are rare, but all have occurred in my experience, and should be given consideration in every case where the cause of obstruction is not evident. This would prevent many mistakes and lessen the disappointment experienced when operations have been performed for adenoids without giving the expected relief.

Lymphatism.—This name alone opens a rich field for thought and discussion. I intend only at this time, however, to touch on the ways it may influence the upper respiratory sounds. The upper air tract is a favorable location for the early manifestations of lymphatism, either in the severe and rare form of leucemia or in the so-called lymphatic temperament or lymphoid diathesis.

The latter now claims our attention, as its presence is usually apparent in the enlargement of the faucial tonsils and other lymphoid tissues in the pharynx and on the base of the tongue. There are some cases, however, where the cervico-bronchial glands or the mucosæ of the trachea and bronchi are principally affected. In these cases the manifestations appear very early, and, in my belief, may even be present at birth. The mucous glands may alone be implicated, or it may extend to the dense network of lymphatics and lymph nodes surrounding the trachea and bronchi. In either case the lumen of the tracheo-bronchial tract is narrowed and considerable stenosis results.

Under ordinary circumstances no marked symptoms of respiratory embarrassment might be evident until the child cried or during feeding. At these times what had been only a little hard breathing now becomes a labored and noisy respiration from the child's efforts to get sufficient volume of air, and presents a marked resemblance to obstructive adenoid breathing. The difference between them is that in all degrees of obstruction above the uvula the infant is obliged to remove the nipple from the mouth every few moments to obtain air. When the obstruction is lower down the nipple can be retained in the mouth during the entire period of feeding. Furthermore, when stenosis of the tracheo-bronchial tract exists, sonorous and asthmatic chest sounds may be heard while the child is nursing, which cease immediately when feeding is over.

Lithemia.—The lithemic diathesis may be manifested at an early age by recurring attacks of rhinitis, pharyngitis, trachitis and bronchitis. Infants of this type may have a family history of rheumatism or gout, which renders them extremely sensitive to exposure or any change of temperature. Crying, feeding, or anything which disturbs the vascular supply of the upper air tract, may produce temporary symptoms of obstructed respiration. Recurrent naso-pharyngitis is frequently seen in these lithemic teething infants, and produces a condition which might readily be mistaken for a recurrent inflammation in a small adenoid. A case of this kind has recently been under my care. The primary attack began when the infant was four weeks old, and recurred at intervals of about six weeks until it was nine months old. It then had its most severe attack, accompanied by an acute follicular tonsillitis, and followed a week later by a severe rheumatic infection. Erythema papulata appeared over the surface of the body, accompanied by severe acid perspirations, irritable bladder and a temperature ranging from 101 to 105 F. These symptoms lasted about four weeks, when convalescence began. In all the attacks the first symptom noticed was the child's refusal to take the bottle, or that it would take only an ounce or two at a time. An examination of the throat showed that the pillars of the fauces and the posterior pharyngeal wall were swollen, red and dry in appearance; later the mucous glands became prominent and stood out like small beads over the surface of the membrane. In forty-eight hours the membrane looked edematous and began to secrete a clear fluid, which soon became white, thick and tenacious, and could be removed from the throat and nose in long, firm strings. The quantity of this secretion was surprising, and it completely occluded the naso-pharynx and nasal passages. The complete cycle of an attack lasted about seven days, when the child again took nourishment in usual quantities and soon returned to its normal state of health.

The lithemic infection is usually confined to the superficial tissues, but may spread beneath the pharyngeal aponeurosis, forming a small retropharyngeal abscess, which may increase gradually in size for a period of several months and produce a great deal of respiratory disturbance.

Either syphilitic or gonorrheal rhinitis may cause prolonged nasal stenosis. The former class of cases are the most frequent, and can be easily diagnosed if other manifestations are present. If, however, the infant has every appearance of health and thrives well, the

cause of the rhinitis may not be suspected. Gonorrheal infection of the nasal mucous membrane is happily rare. The diagnosis is not difficult as the infection commences in the eyes.

Congenital Atelectasis produces respiratory symptoms which may sometimes be mistaken for adenoids by competent observers. If considerable lung tissue is involved the symptoms are so marked that a mistake should not occur. If little lung tissue is implicated the condition of the respirations might not be readily understood.

Digestive Disturbance.—In some infants we have digestive derangements accompanied by vomiting and regurgitation of large curds of milk. The latter may in some instances lodge in the nasal passages and naso-pharynx, producing more or less nasal stoppage and noisy, labored breathing. The size and firmness of these impacted milk curds would suggest that they had been some time in forming, and that they were subjected to considerable pressure and rotatory movement from the action of the pharyngeal and palatal muscles.

Billard claims there is a non-traumatic esophagitis, which accompanies stomatitis and gastro-intestinal irritation, and may produce considerable pressure on the trachea and larynx. He describes cases and verifies his statements by a number of post-mortem examinations. Two patients have been under my care with symptoms similar to those described by Billard, and I could make no other satisfactory diagnosis.

Congenital hypertrophy of the tongue is also rare. I have reported two cases and have seen one other. One of the reported cases was very interesting because of the amount of respiratory obstruction.

Mr. H. had a large tongue from birth, which had always protruded between his lips, and throughout his life had caused many alarming attacks of suffocation, chiefly at night. When four years of age its increasing size and unusual appearance induced his mother to consult several surgeons as to the advisability of removing a portion of the tongue. After his fifteenth year the lingual veins became so engorged at times that it interfered greatly with his respiration, and on one occasion tracheotomy was contemplated for relief, but the application of leeches to the tongue made this unnecessary.

Children between six months and three years of age may suffer from the ailments we have just considered as belonging to early infancy, but they have also other conditions which are not present at so early a period. The following table will be interesting as showing the relative frequency of age and abnormalities found in the four hundred and thirty-seven children I have already alluded to:

- 181 infants were 3 years old.
- 48 infants were 2½ years old.
- 100 infants were 2 years old.
- 62 infants were 1 year old.
- 27 infants were 6 months old.
- 18 infants were under 6 months.

Of these:

- 87 had adenoids alone.
- 80 adenoids and enlarged tonsils.
- 44 hypertrophied tonsils without adenoids.
- 50 hypertrophic rhinitis.
- 21 foreign bodies.
- 20 eczema nares and folliculitis alæ nasi.
- 13 specific rhinitis.
- 4 deflected septa.

The balance suffered from more or less acute affections, not of special interest at this moment.

On glancing over the foregoing list, many conditions will be recognized as liable to produce marked nasal obstructions. Large tonsils alone may cause snoring and mouth-breathing. A superior or inferior hypertrophy of the tonsils may produce these symptoms. In the former the upper extremity of the tonsil is buried in the soft palate and adhering to its pillars, greatly diminishes the lumen of the naso-pharynx. When the prolongation of the tonsil is downward it may extend along the lateral wall of the pharynx to the top of the larynx, diminishing the lumen of the laryngo-pharynx and causing noisy, labored breathing. I might, incidentally, state that any inflammatory changes in an inferior hypertrophy of the tonsil places the child in imminent danger of suffocation, especially if there is any suppuration.

Hypertrophic rhinitis is common in children, and is usually manifested by an enlargement of the anterior and posterior ends of the inferior turbinated bodies and an increase of erectile tissue on the posterior margin of the vomer. These conditions are frequently mistaken for adenoids, but as they may accompany adenoids, it is important that their presence should be looked for and understood. On several occasions I have seen children whose naso-pharynxes had been successfully cleared of all lymphoid tissue, but as the nasal obstruction was not relieved, the physician was blamed for an incomplete operation. The hypertrophic rhinitis in some instances is not sufficient to obstruct the breathing, but the great quantity of mucus secreted and the inability or neglect of the child to blow it out, produced the stoppage.

Foreign bodies, such as shoe buttons, small stones and medicinal tablets, are frequently put in the nose by children without the parents' knowledge. A discharge and snuffling of the nose soon appears, and if the cause is discovered it is at once relieved. If, however, the foreign substance is not found, but remains for years in the passages, it becomes incrustated with various salts and imbedded in granulation tissue until it is difficult to locate. The nasal stenosis does not come alone from the foreign body, but from an accompanying irritative rhinitis.

Septal spurs, ridges and deviations produce more or less nasal occlusion. They are not common in children under three years of age, but occasionally a deviation from traumatism may be found. When the anterior margin of the triangular cartilage is displaced to either side, even slightly, it may cause a valvular action of the alæ nasi during inspiration, which occludes the passages.

As I have already stated, we may have adenoids without any mouth breathing or noisy respiration. This would indicate either a very wide or highly-arched post-nasal space or that the lymphoid tissue should be in a single clump, immediately behind the septum or in small flattened clusters, well distributed over the surface. Other symptoms usually lead to the discovery of the adenoids, such as recurring earaches, intermittent hoarseness, frequent colds, constant hacking cough, croup or profuse post-nasal discharge. Headaches, paroxysmal sneezing, continued dry nasal sniffing, asthma, choreic movements of the facial muscles, nocturnal enuresis, night terrors, glottic spasm, and many other remote reflexes are added by some to this list.

We cannot be too careful in avoiding the limited opinions which special practice is apt to cultivate, and in view of the varied causes of obstructed and noisy respiration, we should exercise the greatest care in the diagnosis and treatment of all affections of the upper air tract of infancy.

7 East Fifty-fifth street.

DIFFERENTIAL DIAGNOSIS OF AFFECTION OF THE EUSTACHIAN TUBE AND SPONGIFYING OF THE LABYRINTH.*

BY J. HOLINGER, M.D., CHICAGO.

The two conditions are pathologically widely different. The functional result is, to a certain extent, the same in both, namely, a higher or lower degree of deafness. The text-books give very little positive information about either disease. Affection of the Eustachian tube is hardly mentioned as a separate clinical entity; instead, we find indefinite references to the nose and naso-pharynx as causing numerous affections of the middle ear. Therefore, allow me to draw first a sketch of the clinical picture of the *affection of the Eustachian tube*.

It occurs in all ages and in both sexes. Deafness with or without noises, pain and stuffiness in the head, are the predominating features. The objective signs in a typical case are as follows: The drum-head is retracted. There is a sharp sickle-shaped fold of the membrane from the short process backwards, often another one forward. The mallet is foreshortened and the light reflex is reduced to a point in the umbo or has entirely disappeared. Shrapnell's membrane is sunk inward and sometimes shows light reflexes as if from a hollow hemisphere, or one or two folds cause a couple of streaks of light reflexes from the short process upwards. In the nose we find a great many changes: Hypertrophies of the inferior turbinal, especially its posterior end, and spurs and deviations of the septum. In examining, I do not put the question in this way: "Is there anything that might interfere or clog the Eustachian tube?" but rather, "Is there anything in the nose that is liable to irritate the nose and keep up a certain amount of swelling and redness?" I would not remove, *e. g.*, a large ridge of the septum or hypertrophy of the turbinals, if air passes freely through the nostrils, if cold in the head rarely occur, or if the membrane looks rather pinkish. But I should not hesitate to operate, when a velvety, swollen, bluish-red or bright red membrane covers even slight hypertrophies, and the patient complains of a cold every two or three weeks. For the examination of the naso-pharynx, besides the mirror, I use Lindt's

* Read before the Western Ophthalmological and Otolaryngological Society, Cincinnati, April 11, 1901.

palate hook, with the head thrown back. I consider this examination most valuable, especially for lateral pharyngitis. The examination of the tonsils is made according to Killian. These two methods allow us to discover swellings and reddenings in the neighborhood of the orifice of the tube and especially below the tube, on the posterior pillars of the soft palate, and high up on the rear wall of the pharynx. An important point in the diagnosis is the catheterization. Before using the catheter, the hearing distance is taken. The catheter is used always with the hearing tube, and the character of the sound produced by the air entering the middle-ear is carefully observed. This sound must be harsh, loud blowing, apparently produced in the examiner's own ear, free from bubbling or other accidental noises. Smooth and low sounds that appear to be rising from far off are suspicious. After inflation we make another hearing test. *In affections of the tube there is an increase from two to ten times the original hearing distance.* At the same time all signs of retraction of the drumhead have disappeared, of course, only to return after a longer or shorter period.

I may fill out this sketch still more, and add two conditions which are liable to frustrate a diagnosis and a successful treatment. The first one is the smoker's catarrh, from which, in our smoky city, not only smokers suffer, but almost everybody. The second arises from the fact that the pharynx is, at the same time, a part of the alimentary tract as well as of the respiratory. As such it takes a part in the diseases of the stomach and esophagus as well as of the nose and mouth. Disorders of the stomach may keep up a chronic pharyngitis, which in itself is inaccessible to treatment, and frustrates all attempts to diagnose or cure the resulting affection of the tube. Two cases may illustrate these last statements. Mr. G. S., age twenty-one, druggist, came first under my observation in the fall of 1893, with complaints of increasing deafness, lasting for several months. The hearing distance was then, in the right ear, for whisper, 2 meters before and 4 m. after catheterization; in the left ear, 1 m., and after catheterization 2 m. Rinné's test in both ears was shorter than normal, +10 sec. right, +8 sec. left; lower sound limits normal. I inflated and massaged the ears regularly every other day; I forbade smoking; I cauterized and painted the pharynx. He got worse until he could not attend to business. In 1897 I took the following notes of his condition. Both membranes slightly retracted; right one does not become normal after catheterization. Hearing distance in the right ear, before and after inflation, 30 cm. (1 foot); in the left

ear, 25 cm. for whisper; Rinné's test, right ear, —10; left ear, +10, not quite definite. The lower sound limit was a little higher than normal, but not definite. Weber-Schwabach, same in both ears; normal as to duration. I was not persuaded about the differential diagnosis of the sclerosis, as I called it then, and the affection of the tube, but there was more evidence in favor of the latter. Therefore, I insisted upon a longer period of sojourn in Mexico. The patient stopped smoking, and returned after two years with normal hearing and a normal pharynx.

The second, Dr. X., age thirty-two, was first examined June 18, 1898. Father hears only loud shouting. Patient became more and more deaf during last two years. Air enters through the catheter into both middle ears with a soft distant sound. Hearing before catheterization, 1 m.; after, 2 m., in both ears. Rinné's test was negative in both ears and the lowest sounds were inaudible. Weber-Schwabach was not markedly prolonged. The pharynx was bluish-red, velvety, swollen. Galvano-cautery, as well as painting with Mandl's solution, was without immediate result. Improvement to normal came *spontaneously* when *careful diet* cured a chronic gastritis, which had caused no other symptoms but the pharyngitis. The nose was always free on both sides.

These cases offered some difficulties to differential diagnosis. Still, the result of the functional tests was typical in neither of them. The nose in both were free. Rinné's test changed repeatedly in the first patient, so that it was sometimes negative and at other times positive. In the second one Rinné's test was negative until the gradual improvement set in. The fact that the father of the patient was deaf spoke much in favor of spongifying.

Now, compare with this picture the one described in spongifying of the labyrinth.* First, heredity. Very often some relative is affected in a similar manner. Second, the *onset* of the disease dates very rarely further back than the eighteenth to twenty-fourth year of life. The main complaint of imperceptibly beginning and slowly increasing deafness is the same as in affection of the tube, and likewise many other of the subjective symptoms give us no clew. Sudden increase in deafness and heavy cannon-shot-like detonations are often found in spongifying, while in affection of the tube sudden improvements are sometimes observed. Third, more definite is the result of the *objective examinations*. The drum-head is found normal or nearly so. Perhaps we find the typical red intermediary zone, which is pathognomonic of sclerosis or spongify-

* THE LARYNGOSCOPE, Vol. X, No. 1. Holinger: "Spongifying of the Labyrinth."

ing. It is hardly necessary for me to enter into the details of the findings of sclerosis, which are set forth in every text-book. The nose and naso-pharynx and pharynx, however, are normal, or very nearly so. They are often rather pale in patients, who show no other signs of anemia. No trace is found of the redness and swelling of the posterior wall of the pharynx. The nose is wide, and exceptionally are hypertrophies found. The functional tests are as follows: The sound of the air entering the middle-ear in catheterization is harsh, apparently arising in our own ear. The hearing distance is increased very little, or not at all, after catheterization over what it was before. Finally, we have the three typical findings of the functional tests—shorter or negative Rinné's test measured in seconds. Furthermore, increased bone conduction for the lower sounds, tested with (A) fork without weights; third, a defect of hearing at the lower end of the normal scope of hearing. The extent of this defect varies, and does not necessarily correspond with the decrease of the hearing in general. I found defects of two or even three octavos where the decrease of hearing for whisper was very small, but also defects of one to one and a half octavos where the hearing was beyond a whisper close to the ear.

There are some diseases where you can make a diagnosis from one or two symptoms alone, but this is not one of them. Only by considering the picture as a whole will you be able to get an idea of the condition. You have to weigh the different factors and compare them. If you cling to one symptom, or even one group of symptoms, exclusively, you are bound to make mistakes. A complete command of the technic of the examination will help you greatly. Large experience in examining the nose and naso-pharynx is indispensable. Zeal and interest in the subject will help you over the first period of disappointments. If you start with a critical, or prejudiced sentiment, you cannot but fail. In closing, I simply state the fact that in all cases which came to a post-mortem, the diagnosis, made some ten and twelve years previously, was confirmed. Objections against the method would only be logical, if in a case where the diagnosis has been made, the post-mortem would not show a trace of the typical findings of spongifying.

DISEASES OF STENSON'S DUCT AND THE TREATMENT.*

BY CARL E. MUNGER, M.D., WATERBURY, CONN.

The excretory duct of the parotid gland is composed of small¹ branches originating in the gland itself and uniting in one common trunk, passing over the masseter and through the buccinator muscles, opens into the buccal cavity on the inside of the cheek opposite the second molar. The walls are dense and consist of an outer fibrous coat with contractile fibres and an inner mucous coat lined with columnar epithelium. Upon the integrity of this duct is dependent the normal flow of the parotid saliva, which forms such a large proportion of the glandular secretion which is important in buccal digestion. Whenever there is a closure, partial or complete, of these ducts, that becomes permanent, the resulting changes in the parotids themselves must be disastrous to function and structure. The diseases of this duct are either primary or secondary, and are temporary or permanent.

The primary diseases of Stenson's duct are:

- (a) Inflammation, acute or chronic.
- (b) Formation in duct of calculi.
- (c) Injuries to duct.

The secondary diseases are:

- (a) Occlusions of duct following acute inflammation.
- (b) Following excessive salivation.
- (c) Impaction of calculi.
- (d) Stricture due to healing of wounds.
- (e) Ulceration of duct or abscesses in duct due to impacted calculi.
- (f) Stenosis and ulceration due to impaction of foreign bodies.
- (g) Cystic dilatation due to simple inflammation or cicatricial obstruction and suppuration.—“*Amer. Text-Book of Surgery*,” p. 635.

- (h) *Fistulæ*.

An acute inflammation of Stenson's duct, which is strictly primary, can be due only to exposure to cold or extension by continuity of an existing inflammatory condition in the mouth. A marked case came under my observation September 25, 1899.

Mrs. S. G. woke up on the 20th of June after exposure to cold and wet the day before on board an ocean steamer, and found she

* Read at the seventh annual meeting of the American Laryngological, Rhinological and Otological Society, New York, May 24, 1901.

could not open her mouth wide, and had a swelling in front of the right ear, and in addition presented the symptoms of an acute cold; her eyes were swollen and her throat was sore. She said that at the time of her first visit to my office that it seemed as if her head and throat were all filled up. She also complained of a feeling of fullness in the right ear, and stated that her mouth was apt to be dry. Examination showed that the ear was normal. There was a large, hard swelling of the right parotid gland, with no especial tenderness. There was also a hard cord-like feeling along the course of Steno's duct. The duct would admit only a small probe and for only a short distance at first, but repeated trials finally were successful so that the small probe could be introduced the whole length of the duct, and gradually probes of increasing size were passed until the duct was thoroughly and permanently dilated, with the result that the flow of parotid saliva was normally established and the gland itself practically reduced to its proper size.

The Formation of Calculi in the Duct Itself probably occurs only where the² lining of the duct has been roughened or thickened or a partial or complete stenosis has resulted with an accompanying decomposition of the parotid saliva.

Injuries to Stenson's Duct may be due to the traumatism of operations, or to injuries occurring in this region resulting in laceration or cutting of the duct, and the duct may also merely be contused or there may be a³ subcutaneous laceration with no opening externally upon the face or internally within the cheek, in which case there will result a swelling of the cheek due to infiltration of saliva into the cellular tissue.

Occlusions of Stenson's duct occur as a result of adhesions following⁴ acute inflammations or violent salivation, or after scarlet fever or diphtheria or gangrene of cheek, or may occur in the course of low fevers.

The healing of wounds of the cheek may result in stricture of the duct, either partial or complete, and if partial, may become temporarily complete from external influences, such as cold, etc. There may be a stenosis as the result of an ulceration or abscess due to an impacted calculus, and there may be a stenosis due to the impaction of foreign bodies other than salivary calculus, such as⁵ hair in the duct,⁶ fish bone, bristle from tooth brush,⁷ small bearded tail of a chestnut, etc.

Salivary fistulæ, more especially those due to changes in Stenson's duct, have received much attention in the past and much ingenuity has been displayed in repairing the ravages which have occurred from stoppages in the duct. These fistulous openings

may take place from any part of the duct or may occur directly from the parotid itself, or the external opening may be at a considerable distance from the parotid, due to burrowing of the parotid saliva in the cheek wall. These fistulæ may open externally or internally, but as is the case with fistulæ in other parts of the body the openings are much more frequently to be found on the external surface. There may be one or more fistulous openings, the multiple openings being more often the rule, when the fistula is from the parotid itself.

The diagnosis of a parotid fistula, or fistula of the duct, is frequently simple, and when it is obscure a test of the escaping fluid will determine whether or not it is salivary in character. One test is that given by Robert's tincture chloride of iron, mixed on a white surface with the suspected fluid, will give a pink reaction with the sulphocyanide of K present if saliva is mixed with the discharge. Another is utilizing the power of the saliva to convert starch into sugar, and detecting it with Fehling's solution, and also by the disappearance of the starch and the inability to detect it with the iodine test.

The Treatment of these Cases of Stenosis will depend upon the character and cause of the trouble and the resulting after-effects. When the stricture is due to acute inflammation, gentle probing of the duct will relieve the damming up of the parotid saliva and in a short time the duct will remain permanently patent.

When the stenosis is due to formation of a calculus or calculi in any part of it, the method of procedure must depend upon the position, size and consistency of the stone. Probing and manipulation may be sufficient if the calculus is small, and especially when it is near the buccal orifice. If it is large or hard, or is surrounded by inflammatory adhesions, or there has been an ulceration through the wall of the duct, then excision must be resorted to and, of course, the operation should be an internal one to prevent an external fistula. If the calculus is near the gland itself an external operation may be necessary.

Injuries to the Duct, whether due to accidental traumatism or occurring in the course of operations in this region, should be attended to at once to prevent that lamentable condition, salivary fistula.

Occlusions of the duct may be due to more than one stricture, in which case much time and patience will be exhausted before these can be sufficiently and permanently dilated. These dilations may be accomplished by the use of flexible probes of varying size and increasing diameter, and where the strictures are dense

and the lumen of the duct at these points very small, electrolysis might be utilized with great hope of success—though I have not had any experience with this method of procedure—or a canaliculæ knife might be used with after dilatations with probes.

Stricture due to the Healing of Wounds, or ulceration of the duct or abscess in the duct due to an impacted calculus, will be with difficulty, and often never, overcome by dilatation alone if the injured ends of the duct do not remain in apposition. When such is the case a fistula will result and must be treated accordingly.

Stenosis due to Foreign Bodies must, of course, be relieved by the removal of the cause, and this becomes more and more difficult according as the substance is located more and more deeply in the duct. If near the buccal orifice dilatation and the use of delicate forceps will usually be satisfactory. If the foreign body is more deeply lodged, then the duct must be slit in order to reach it, and if near the glandular end of the duct an external operation will be called for and the case becomes one of injury to duct from operative measures.

The Methods of Treatment of Salivary Fistule are too well known to more than refer to them. In the recent cases the mere covering of the external surface of the cheek over the seat of the fistula, with collodion, or the use of adhesive strips, or the use of suture may be all sufficient and the flow of saliva will be immediately directed inwards and the external opening will heal. But in the more chronic cases all sorts of expedients must be resorted to. The fistulous tissue may be excised and the fistula then treated as a recent one; or the distal end of the injured duct may be dissected out and sutured inside the cheek, and closing the external wound as before. A drainage tube has been inserted through the fistula, gradually pulled through the cheek walls, leaving only a small external opening which may be readily closed, or a seton may be used by passing a large cord through the fistula and through the whole thickness of the cheek, and its two ends tied together at the angle of the mouth. This is moved back and forth frequently until a flow of saliva becomes established inwards and the seton removed and the external wound closed as before. This latter method is one of the oldest, and in many cases is the easier of application and is successful.

There is a condition which presents itself rather frequently, when the patient comes to you with a swelling of the parotid of some time standing, where the question of making an external opening into the gland must be considered. If there is present pus or broken-down gland tissue, there is no option, and an external opening must be made and the diseased tissue thoroughly removed, but it must be re-

membered that a parotid fistula results, and the treatment has but begun. If the duct cannot be dilated and the parotid swelling reduced, an exploratory aspiration should be made, and if the escaping fluid is not purulent every effort should be made to dilate the duct or perform some operation which will direct the flow of saliva into the mouth by some one of the methods which have been mentioned for curing a salivary fistula from the duct itself. If pus is formed an external opening of sufficient size must be made, the pus allowed to escape, and the broken-down gland tissue thoroughly curetted and then proceed to render the duct patulous or to make an artificial path for the saliva by which it can reach the mouth.

There is still another class of cases where stricture of Stenson's duct causes a swelling of a lymphatic gland or glands at some distance below the parotid itself, and there is a resulting breaking down of gland tissue. This condition is undoubtedly due to the⁸ fact that the parotid lymphatic glands have efferent vessels passing to the so-called ectal cervical lymphatic glands which serve as channels for the passage of the infecting cause. The treatment of this condition is the same as that for any broken-down lymphatic gland, together with the treatment which has for its result the rendering of Stenson's duct patent.

As examples of pathological curiosities may be cited: The cases where⁹ masticating food stimulated the parotid gland to such an extent that the quantity of saliva poured out was so great that the temporary result was practically that of a stenosed Stenson's duct, and the saliva transuded through the skin.

Two cases reported by Hyrtl and Deichmüller where the parotid gland contained air;¹⁰ a case of spasmodic closure of the duct resulting in an acute marked enlargement of the parotid which lasted for two hours;¹¹ a case of paroxysmal swelling of the parotid glands in a female due to hysteria, was called angioneurotic edema, or it was due to air entering a rigid Stenson's duct.

In closing, I would like to emphasize that a stricture may be due to a simple inflammatory condition due to cold. That more than one stricture may be present, that the parotid tumor may or may not contain pus, and that in dilating Stenson's duct it will be found necessary frequently to use flexible probes or bougies, which may be bellied or bulbous, and that gentleness and patience must be combined with skill and knowledge in the treatment of this interesting class of cases.

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SOCIETY PROCEEDINGS.

WESTERN OPHTHALMOLOGIC AND OTO-LARYNGOLOGIC ASSOCIATION.

(Proceedings continued from page 146.)

Auscultation of the Mastoid. DR. ANDREWS (Chicago).

This paper was published in full in THE LARYNGOSCOPE, June, 1901, p. 416.

DISCUSSION.

DR. BALLENGER: I believe that auscultation of the mastoid with a stethoscope and fork will be of some value to us in arriving at the condition of the temporal bone with its antrum and the accessory sinuses. I think we can say the method is not new, as I am informed by a physician that while in Edinburgh he found the stethoscope was used over the mastoid in the Royal Infirmary of Edinburgh and in the clinic held by Logan Turner. While from these two references we may infer that the method is not new, we must also acknowledge that it is one of value and therefore should be considered. That it is not in use generally in this country is certainly evident, because I have known of no one who makes use of it except Dr. Andrews. I have, at Dr. Andrews' request, done a little testing, and have satisfied myself that the test is one of some value. I do not, however, believe it is of paramount value in diagnosis. There are other methods by which we can arrive at the same conclusions. If we will use transillumination of the mastoid in a dark room, we will find when morbid material is present that light is not transmitted to the external meatus; and by comparing the two sides it may be seen at once that the conditions are different.

Nevertheless, Dr. Andrews has brought to our attention a method which can be used in addition to those already at our command, and it is certainly an interesting one. I think he called attention in his paper to the fact that the fork must be elevated when changing its position on the mastoid, otherwise the skin may be compressed between the handle of the fork and the bell of the stethoscope, thereby greatly augmenting the intensity of the tone. Great care should be exercised in this regard else a wrong

conclusion may be reached. I think the test is of great value, as Dr. Andrews has stated, in locating the lateral sinuses. The difference in the tone over the lateral sinus and when it comes further forward is very apparent and very striking. I commend the observations as set forth by the essayist and shall certainly make use of them.

DR. J. A. STUCKY (Lexington, Ky.): I feel that the committee in selecting me to open this discussion has done like some people do with their horses—outclassed me. I feel incompetent to speak on the subject, because I know nothing about it. The essay has been one of great interest to me. Dr. Ballenger says the method described in the essay is not entirely new, but I do not know that it is the new things we are after so much as the true—the facts not theories. If this method can aid us in determining the presence of pus in the antrum and possibly locating the lateral sinuses, it is of inestimable value to us. In my experience I have never had a case of cerebellar abscess. In regard to operations upon the mastoid I am inclined to be on the conservative side and to question whether we are not frequently too hasty in resorting to the major or radical method. I have opened only fourteen or fifteen mastoids myself but have seen many others opened, and have seen but one sinus thrombosis and no cerebral abscess. I would like to ask Dr. Andrews if he has tested this method in examination of the other sinuses, for instance, the frontal sinuses and the antrum of Highmore? Also, can he tell by this method of auscultation the difference between pressure of pus in mastoid cells and the eburnated or sclerosed condition?

DR. STEIN: In regard to the method suggested by the paper, I have used it a few times at the suggestion of Dr. Andrews. Recently I had occasion to use it in a case I operated on afterwards. I was somewhat misled in my results in the examination. I do not know as that stands as a criterion at all in the results I may attain in the future. This case was one of empyema of the mastoid. I heard the tone strong for twenty-two seconds over the affected side, and on the opposite side I heard it for a like time, twenty-two seconds. I knew there was a mastoid abscess there. There was no question of diagnosis. The patient had shown all signs of brain complications. On operating I found dense, compact bone for quite a distance covering over a large necrotic cavity. Probably the density of the bone which overlay the region of the cavity was responsible for the unaugmented condition of the sound. Where you

have dense bone you are going to have augmentation in the sound. In the examination of quite a few normal cases, I have heard a tuning fork quite often thirty, thirty-two and thirty-five seconds. Possibly, like one of the doctors mentioned, I have an acute hearing. That might enter as a factor in the examination—the hearing of the examiner. Also the tuning fork will enter into consideration. These things must be considered in arriving at a definite conclusion as to the condition. As to finding the lower limit of the middle cerebral fossa, I think we might be misled very frequently. As mentioned by Dr. Ballenger, the land-mark overlaps the external auditory meatus and might not give us any definite and positive indication.

DR. BECK: The case referred to by Dr. Andrews was one of acute otitis media on both sides. The partial examinations I made were very unsatisfactory with the method Dr. Andrews described. I made two examinations, the last on the side where the mastoid became affected. The time was, I believe, thirty-five seconds; on the other, twenty seconds. The patient was operated on and I was not at all surprised that we found just what was expected, as described by Dr. Andrews. The patient got well and I was more surprised on examining the well ear that she had no signs of mastoiditis in making the careful examination by this method, and heard the sound more intense than when we examined in his office, and the time was fully thirty or thirty-two seconds. I am not able to explain that. She had no bulging of the drum membrane, although she had an acute otitis in that ear. Perhaps the increased density of the structure may explain it. As far as originality is concerned, I never heard of the method until very recently. I spoke to a man who had studied in Vienna and he said he saw the method demonstrated at Urbantschitsch's clinic last year. I was there but did not see it. There was a question as to whether it had been tried on the antrum of Highmore. It has been tried in the clinic of Jacobson, Berlin, to find dullness on percussion on the affected side, but owing to the painfulness of this procedure the method was unsatisfactory.

DR. BROWN: I did not hear all of the paper, but this a subject in which one is much interested as one of the means of aid in a knowledge of diseases of the mastoid. I would be glad if the doctor would tell us a little more of the tuning forks and his method of using them. Dr. Pierce and I were making our first attempt and the fork was heard longer in the well ear than the affected, but I am satisfied we struck it with more force for this ear. Means must certainly be provided for uniform force in the blow that sets the fork in vibra-

tion. It seems that good, scientific grounds exist for this test to rest on. We have a certain medium to act as a sounding board, and any change in the density and thickness of the medium will affect the duration of the sound as heard by the examiner. At the same time we must admit that the action of the mastoid as a sounding board may vary from anatomical peculiarities as well as from pathological changes.

DR. GOLDSTEIN: I think the method which Dr. Beck refers to, of determining the condition of the mastoid, as used by Urbartschitsch, is the one which is used in connection with transillumination. The focus of light is seen to a certain extent in the dark room through the middle ear in case the walls are normal and membrana tympana translucent. In case of accumulation of pus the illumination is much less marked and shows a difference by comparison with the healthy side. The question has been raised as to the possibility of using the diagnostic feature of the tuning-fork in other sinuses. Dr. Kuyk, of Richmond, Va., published in a recent issue of *THE LARYNGOSCOPE* a notice of his research in this line and claims similar results in diagnosing the maxillary sinus.

DR. PIERCE: This is an important matter, inasmuch as it brings into play physical laws which are not subject to change or individual idiosyncrasy, and if it can be applied to the diagnosis of antrum or mastoid diseases, it must be of great importance. The method in various forms has occurred to a number of investigators. As far back as nine years ago Körner made some investigations with negative results. As Dr. Brown has just said, we all hear the tuning fork much longer than the doctor reports having heard it in his case. I heard it fifty-three seconds; the doctor fifty odd seconds, and a couple of others heard it even longer than we did. The duration of sound depends largely on the force of the stroke given the tuning fork. Again, the sound waves set up by the fork penetrate the mastoid region, are carried through the brain mass, in the same way as the sound waves are carried out from the vertex through the auditory canal into the outer world, say in Weber's test. If my reasoning is right the phenomenon of shortening is due to the reflection and not absorption of sound waves by the fluid in the ear. I have had no experience with the method, but shall turn my attention to it immediately.

DR. ANDREWS, closing discussion: I shall not attempt to answer these questions in the order in which they were given, but let me say in response to our president's statement, that Dr. Kuyk's examination is a subjective test and not objective. He depends

upon transmission of sound waves to the patient's ear and not to his own, which makes it an entirely different test. If Dr. Pierce had heard the paper some of the statements which he has made would probably not have been made. The fork he was using for making these tests is not the fork I use. The fork which Dr. Pierce used can be heard by the normal ear over two minutes. The fork I have used can be heard about thirty-five seconds. So it is not strange that he heard the fork longer than the time I mentioned. I am very glad to learn that other work has been done along this line. I have asked quite a number of my friends about their experience. A number have wondered why they had not thought of it before. I am glad some one else has. The case Dr. Stein mentions is one in which the use of this test was not indicated, because everything else pointed toward destruction of the mastoid. Dr. Stucky asks about the aid in operating. If it aids us in locating the lateral sinus it may help us to keep out of trouble. I have used it in the examination of the frontal sinus, but have no report to make. It is not necessary to exclude the sound waves that are absorbed by the tube. If you will place the stethoscope on the palm of the hand and then go over the tips of the fingers with the vibrating fork, the moment you get the fork on the finger over which the bell is resting you will find a marked increase. The sound is conducted through the bone. I have used it with general surgeons in diagnosing fractures, for instance, of the femur. When the tuning fork is on the knee and the stethoscope is on the head of the femur or the crest of the ilium the sound will be more distinctly heard on the normal side than on the opposite side if the bone is broken.

Therapeutic Value of Adrenalin. By DR. DUDLEY S. REYNOLDS
(Louisville, Ky.)

DISCUSSION.

DR. DAYTON: I will say that so far as this solution is concerned, I am not familiar with it. I have used the dry extract in my experiments begun almost three years ago, and I was astonished when he spoke of his 1 to 1,000 and 1 to 10,000 solution, inasmuch as I used five and ten per cent solution of dry extract. I found its hemostatic and bleaching properties were marked in the eye and I tried it first for foreign bodies and then again for acute conjunctival diseases. I found that while there was no question of its bleaching qualities, it did not act beneficially in hastening the curing of acute conjunctival diseases. In operations I found it a benefit, in prevent-

ing hemorrhages in operations upon the conjunctiva. The doctor speaks of the benefits of adrenalin, but he is not explicit enough as to whether he has used cocaine with it or not. He speaks of operating on the conjunctiva without pain, etc. Is it the purpose of the essayist to allow us to judge, that that alone was the anesthetic, as well as the hemostatic, or did he combine the two? I may not have got the meaning clear, but I did not understand that he used an anesthetic other than the adrenalin. I can understand how it would act in dacryo-cystitis with swelling, especially in the acute form. So far as the use of the dry extract is concerned, would say that it has proven itself a very beneficial and important drug to add to our armamentarium.

DR. STEIN: I can see the great advantage in the use of adrenalin over that of the extract in eye work; and in nose and throat work I have recently had occasion to use it in acute cases like coryza. etc. I have had acute coryza in my family and I have tried it. Adrenalin in a solution of 1 to 1,000 is probably better than the ten per cent solution of the extract, but the expense is in the way. It is sold for \$1.00 a grain, which stands a little in the way of its popularity. As to the difficulty of preserving the adrenal extract solution, that is not so great as you imagine. I do not have trouble. The phece Dr. Beck mentions I have used; in fact, I believe I was the first to use it as a preservative in adrenal solution. It will keep indefinitely. I have samples a year and a half old.

DR. BECK: I have used the adrenalin about two months. Previous to that I used the supra-renal capsule, and I found the great difficulty with that preparation was that it became contaminated, mouldy, although I did not get a large supply at a time, and that has been the general objection, and it has been supplanted by adrenalin. I have used it in the eye and nose, both with satisfaction. There is a question about the keeping of this, and it came up in a meeting we had last week, that if the papers are removed and the bottles left exposed to the light, in about a week or ten days they become a light, pinkish color, the color of eserine, which signifies that it is not good any more. The substance I have used for preventing the spoiling of the supra-renal capsule goes by the name of phece.

DR. GOLDSTEIN: I wish to give my unqualified endorsement of adrenalin. I think it is undoubtedly the most valuable therapeutic agent we have yet added since the advent of cocaine. In many ways it is the superior of cocaine. Its value as an agent to contract mucous membrane is far superior to cocaine, and it has not the disadvantage of causing any untoward symptoms of the nervous system.

The tissues of the nose, where I have used it most extensively, are blanched almost as soon as the application is made, and the contraction of the tissues soon follows. When the desiccated supra-renal capsule is applied directly to the nasal mucous membrane it always acts more or less as an irritant. I received the first sample of the adrenalin preparation about December 20th last. I am sure we will get results that we are unable to get with any other form of supra-renal.

Some two months ago I was called to see a case of œdema of the glottis following in the course of an acute nephritis. The use of adrenalin was followed by prompt relief. Other circumstances, I believe, surgical interference would have been necessary.

I have noticed that the after effect remains from two to three hours. Dr. Stein's successful use of it in acute coryza I can indorse. I have seen cases practically cured with one application.

A suggestion which has been of value to me, is that in operating on the middle ear, while the patient is being prepared and put on the table and the instruments are being sterilized the adrenalin solution (1 to 1,000) is dropped in the ear, and the resulting operation is a bloodless one.

DR. DODD: I have used adrenalin for some little time, and I had a case the other day which illustrated its value in eye operations. I have used it in nose work as well, and have found it much superior to the old form of extract of supra-renal. The case I speak of was inflammatory glaucoma, and it would have been impossible to operate unless I had used something of the kind. It would have necessitated a general anesthetic and the woman was in no condition to take it. I only used one to 10,000 of the chloride of adrenalin. It became perfectly anesthetic with the cocaine, and lasted so that I did the operation without trouble or pain.

DR. B. TAUBER (Cincinnati): I had some experience with supra-renal, and lately have commenced to use the adrenalin. I will report my results later on.

To preserve the suprarenal solution, I add to each ounce one grain of salicylic acid, which will keep the solution clear for an indefinite time.

DR. DUDLEY S. REYNOLDS (closing): I am deeply grateful for the interest shown by the members. I would explain that I received from Parke, Davis & Co. a half dozen bottles of various solutions of the chloride of adrenalin in December, 1900, and I experimented with it in an irregular way until the 14th of January, 1901, when I began, with the assistance of Dr. Bullington, to use it in every case where it could be experimented with to advantage. It is the results

of these experiments that I have recited to you. In regard to keeping the solution, I find it will change color if left in an open bottle in a strong light. If carelessly left to the use of assistants at the clinic, employing the ordinary dropping glass, it will begin to spoil in about eight days. I have a solution of 1 to 1,000 in normal salt solution, which I have kept in the dark, which has undergone the change of color—first a little straw color, and then darker until it is now quite brown, and it is just as active and efficient at the present time as when it was fresh. It is exceedingly sensitive to light, but if you will keep it in a cabinet which is kept closed, returning the bottle immediately after taking it out for use, and keeping your dropping glass in a sterile cover, with all necessary aseptic conditions, the adrenalin solution is practically permanent. The highly-colored solution I have now has been open since the 15th of January, and, while changed in color, it is perfectly free from decomposition.

As to the value of it in surgery, I have used it in a great variety of operations, and I find it promptly efficient. I regard it indispensable in doing iridectomy in cases of glaucoma. When employed in operations on the eye, it is desirable to first apply the adrenalin, wait one minute, then apply the cocaine solution, and, after the lapse of two minutes more, you apply another drop of the adrenalin. You need but one drop of the cocaine solution and two applications of the adrenalin. The effect will last for a time far exceeding that required for any of the operations, and no hemorrhage at all will occur in the majority of cases, especially if you hold the lids apart for a few seconds after each application to allow the blood to leave the surface before operating.

The duration of full cocaine anesthesia is about twelve minutes. If you have previously applied the adrenalin solution, and two or three minutes afterward the cocaine, you will find anesthesia remains as long as the vessels remain contracted. It may be an hour or two, and it will almost always be more than twenty minutes, even in glaucoma.

All blood clots, and all inflammatory matters, must be removed, so as to allow the adrenalin solution to come into direct contact with the membrane whenever the hemostatic action is desired. The best way to apply it in cases of hemorrhage is by saturating cotton wool with the solution and apply the cotton with gentle but firm pressure. Spraying may do in mild epistaxis, but not in secondary hemorrhage after operations.

Atrophic Laryngitis. DR. B. TAUBER, Cincinnati.

This paper was published in full in *THE LARYNGOSCOPE*, June, 1901, p. 426.

DISCUSSION.

DR. HOLINGER: I was very interested in this paper for one reason. This condition, especially dry laryngitis is very often found in connection with ozena or atrophic conditions of the nose. The point the doctor makes is well taken and I am sure it deserves much consideration, that in this case there is just the opposite condition, a hypertrophic condition in the nasal passages combined with an atrophy in the larynx. There are two points I would like to hear about: the condition of the epithelium in the nose, and the condition of the epithelium in the larynx? If you succeed in pinching out a little portion of the epithelium in the larynx does it appear to be very dry? If one could get one or two nice slides they would contribute a good deal to the knowledge of these conditions, because, as I say, the combination of hypertrophy in the nose and atrophy in the larynx is exceedingly rare.

DR. J. O. STILLSON (Indianapolis): I have seen cases where I was satisfied that the hypertrophic rhinitis was followed by the atrophic, but have never seen the same individual suffering from the two at the same time.

DR. GARLICK: I would like to ask the essayist if his cases were "mouth breathers." As he states his case had hypertrophic rhinitis and slight as the changes in the membrane may be one finds obstruction to nasal breathing and the inhaled air not properly warmed or cleansed. This as an irritant causes formation of crusts in the larynx and loss of superficial epithelium rather than a true atrophy of the membrane.

DR. B. TAUBER (closing discussion): I have treated about 100 cases of atrophic rhinitis and pharyngitis which were present in the anterior nares, passing downwards into the posterior nares and lower pharynx; also observed several cases of slight atrophic laryngitis in the subglottic region of the larynx. My patient was in good health, had no diathesis, she had an "unique" atrophy of the larynx and could breathe through her nose and posterior nasal space; the mucous membrane of the anterior and posterior nares were in a hypertrophic condition.

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SELECTED ABSTRACTS.

Edited by

FAYETTE C. EWING, M.D., St. Louis,

with the collaboration of the

EDITORIAL STAFF.

The Correction of the Deviations of the Nasal Septum. Etc.—

JOHN O. ROE (Rochester)—*N. Y. Med. Journ.*, April 13, 1901.

This interesting paper is illustrated in a practical manner, which materially assists the reader to appreciate the author's statements. Attention is directed to special instruments for the operation under consideration. The method suggested is based upon the principles of force being applied to one side of the septum, indenting it between two opposing points of resistance placed on the opposite side.

The steps of the technique are described diagrammatically through the article. Good results are claimed for this operation, together with a number of advantages over other methods.

M. D. LEDERMAN.

Note on the Treatment of Collapse of the Ala Nasi—W. J. WAL-

SHAM—*The Lancet*, March 30, 1901.

Collapse of the ala nasi consists in the falling of the external part of the lower lateral cartilage inwards during inspiration. Normally, the lower lower lateral cartilage is doubled on itself, U-like, the inner part being in contact with the lower end of the septum, whilst the external forms a part of the outer wall of the vestibule. There is an amount of stiffness in the cartilage which keeps the anterior nares patent and the resiliency of the cartilage where the bend occurs is sufficient, after the two portions of the cartilage have been pressed together, to restore the patency of the anterior nares. In not a few individuals this resiliency is lost. In some of these cases there co-exists a dislocation of the anterior end of the septum from the columella, and this, when present, increases the obstruction to free inspiration.

This collapse of the ala may easily be overlooked by the surgeon unless he is cognizant that such a condition may occur. For when the speculum is introduced and the blades are separated, the collapsed ala at the same time is, of course, carried away from the septum by the external blade of the speculum, and nothing whatever may be discovered on looking into the nasal cavities to account for the patient's trouble. If, now, the speculum is removed and the vestibule is examined by tilting up the tip of the nose with the

finger, it will be seen that the outer wall comes in contact with the inner when the patient inspires.

The condition is an exceedingly troublesome one to treat. The author has seen some good done by face massage—that is, massage of the dilator muscles of the ala—but not much. When there is dislocation of the of the anterior end of the septum, shaving off the projecting portion will also help matters, though it will not completely rid the patient of his trouble. The various rings, semicircles, celluloid expanders, short pieces of drainage-tube, etc., that have been from time to time recommended for the condition, although they may keep the passage expanded whilst *in situ*, and for the time give relief, soon become irksome and irritable and are abandoned. In one case a number of similar contrivances of various material were carefully moulded and shaped to fit the part accurately. But this patient, like the rest, finally threw them aside and resorted again to his own plan of obtaining relief, namely, rolling up a piece of moist cotton-wool into a ball of the size of a small pea, which he poked up the vestibule into the little pit just within the limen at the angle of bending of the lower lateral cartilage. This tiny ball of cotton-wool was just sufficient to prevent the ala from collapsing, and it gave the author the clew to the method of curing the condition. It struck him that, if in place of the cotton-wool ball, he could transplant there a ball of the patient's own tissue, he should obtain the same end, and this he succeeded in doing in the following way: A strip of mucous membrane, as thick as possible, and about $\frac{3}{16}$ inch in width, was dissected up from the inner wall of the vestibule, leaving the base attached above. The surface of the little pit at the angle of bending of the lower lateral cartilage was next made raw by removing the epithelial layer. The epithelial lining was also removed from the little strip of tissue; the tissue itself was rolled up bandage-wise, and then secured to the rawed surface of the pit by a stitch of the finest fishing-gut passed by a needle through the septum into the opposite nostril and back again. When thus fixed the little roll of tissue pressed out the external portion of the lateral cartilage just enough to prevent the ala during inspiration from falling into contact with the septum. It cannot be seen, and produces no deformity, and so far as his experience has gone it is a permanent cure for this troublesome condition. The surface left by rolling up the strip of mucous membrane readily granulates over and causes no inconvenience. Tension in the strip of tissue must, of course, be avoided, and care must be taken that the surfaces of the roll are properly and completely bared, and their vascular supply not interfered with by drawing the stitch too tight. The operation is best done under general anesthesia, as unless the tissues are manipulated delicately the blood supply of the little strip will be injured and necrosis will take place. STCLAIR THOMSON.

On the Causation and Treatment of Profuse Epistaxis in People Beyond Middle Age—GEORGE COATES—*The Lancet*, April 20, 1901.

The author had a series of five cases of profuse epistaxis not caused by a blow or injury, but coming on without any apparent cause in adults aged fifty years and upwards, all of whom he had known and watched for several years both before and after the attack, and in whom he had been able to trace the series of events which caused and followed it. The attacks have been sudden in their onset, and profuse, generally lasting from half an hour to an hour or more, and tending to recur for several days. The cases are briefly as follows:

Case 1.—The patient was a gouty man. He had had a severe attack of epistaxis seventeen years ago, which was finally stopped by plugging the posterior nares in the usual manner. At the same time he developed cardiac disease, *i. e.*, well-marked mitral regurgitation. He died fifteen years later, aged eighty-two years, from bronchitis and pneumonia. There was some chronic nephritis.

Case 2.—The patient was a woman aged fifty-two years. She had had profuse epistaxis seven years ago, which also was finally stopped by plugging the posterior nares. She developed mitral regurgitation at the same time. She is now alive and well.

Case 3.—The patient was a man aged sixty-eight years. He had epistaxis four years ago. He developed aortic regurgitation at the same time. He was treated with blue pill and a mixture of sulphate of quinine and sulphate of magnesia and rest in bed. Plugging was not necessary.

Case 4.—The patient in this case was a woman, aged sixty-four years, who had suffered for at least ten years from high arterial tension.

Case 5.—The patient was a woman, aged sixty-eight years, who had suffered for several years from high arterial tension, due to arterio-capillary fibrosis and from contracted granular kidney.

With the exception of the patient in Case 1, all the others are now alive. In Case 4 and Case 5, the patients did not develop any valvular lesion. The epistaxis in both of these followed exposure to cold when they were very tired; they both had over-exerted themselves for many days, and then got thoroughly chilled. In both the epistaxis was cured by administering nitro-glycerine and tincture of strophanthus.

In all these cases the sequence of events which led up to the epistaxis was essentially the same, namely:

(a) Long-continued high arterial pressure. (b) Some sudden cardiac failure. In Cases 1, 2 and 3 the epistaxis arose from the giving way of a valve. In Case 4 and Case 5 it arose from loss of power of the cardiac wall. (c) Over-filling of the whole venous system, the weakened heart not being able sufficiently to empty the engorged veins against the high pressure in the arterial system due to contracted arterioles. (d) Leakage from an over-filled vein. In Cases 1, 2 and 3, in which the patients all had a good amount of

muscular strength and vigor, the heart had gone on working against this high pressure until a valve, aortic or mitral, gave way. In Case 4 and Case 5 there was not enough vigor of constitution in the patients for the heart to be sufficiently strong to raise the arterial pressure high enough to cause valvular leakage. In them, however, the same state of venous engorgement was produced in the following manner. They had both over-exerted themselves, and felt very tired for some days, then, when exposure to cold constricted their superficial vessels, such a sudden increase of work was thrown on the heart that the tired muscle was no longer able to do its work efficiently. Here again the veins became over-filled and epistaxis occurred. Both these last cases were caused by the same spell of cold weather, and various remedies, as suggested in the various text-books, were tried with little result. When seeing the patient in Case 4 the thought occurred, Why not try to relax the arteries and strengthen the heart so as to get the veins emptied naturally?

The most scientific and satisfactory treatment of these cases of epistaxis, and by analogy of the other forms of passive venous hemorrhage, is to empty the over-filled veins. As long as they are enormously distended with blood the hemorrhage must continue, unless direct mechanical means are used, and if one nostril be plugged the epistaxis is apt to start from the other. If, on the contrary, we can relax the walls of the arteries and help the enfeebled heart to do its work, it will soon empty the over-filled veins. But, as a rule, this cannot be done by giving heart tonics at first. The heart has been doing its utmost; it has only failed because it has been overworked, and giving a tonic is like spurring a jaded horse. We must bear in mind that in this class of cases the immediate treatment must be directed to the capillaries and small arteries, as the real cause of the epistaxis lies there, not in the nose. Nitro-glycerine is quite effective; nitrite of amyl might be more so, but one of the more quickly acting nitrites should be used at first; afterwards one of the more slowly acting, as erythrol tetranitrite, or possibly even thyroid tabloids, might do as well. When the capillaries and arterioles are dilated and pervious, then comes the time for strychnine or strophanthus. Of course, each patient must be considered individually, and there are other ways of keeping down excessive blood-pressure and strengthening a weak heart. In spite of everything, plugging may have to be resorted to in some cases, but in most of them the hemorrhage can be stopped without resorting to this procedure, which is always most uncomfortable to the patient and sometimes even dangerous.

Finally, by recognizing profuse epistaxis as a symptom of a sudden though mostly temporary heart-failure, there is no danger of commencing valvular disease being overlooked and the patient being considered as one who only requires a little surgical treatment. In some cases it is possible that the alteration in the circulation causing the epistaxis may also cause cerebral symptoms, but here again the cerebral symptoms are mostly not the cause or the result of the epistaxis, but only the result of the circulatory condition leading to the epistaxis.

STCLAIR THOMSON.

Sclerotic Hyperplasia of the Pharynx and Naso-Pharynx—A.

BROWN KELLY—*The Lancet*, April 6, 1901.

The author believes the condition to be a hitherto undescribed pathological entity. The patient was a male, aged thirty-four, who had been subject to slight sore throat for about eight years, and for three years had felt some thickening in his throat. The case presented three striking features, namely, greatly enlarged uvula, a thick band descending in each half of the posterior wall of the pharynx, and thickening of the roof and floor of the naso-pharynx leading to a marked diminution of its lumen. In all the regions affected the morbid process is apparently the same, consisting in diffuse uniform thickening, which histologically proves to be a marked interstitial hyperplasia. The development of the disease has been very slow, and is probably still proceeding. In endeavoring to diagnose this condition several diseases have come under consideration.

1. *Rhinoscleroma*.—In this disease the naso-pharynx is the region most frequently involved, and its aspect may come to resemble that presented by my patient. In rhinoscleroma, however, the reduction in the lumen of the naso-pharynx is due to cicatricial contraction, and not, as here, to thickening of the tissues. Further, no description corresponding with the appearances of the uvula or posterior wall of the pharynx in this case could be found. The fact, also, that rhinoscleroma has been observed in this country only in persons who have come from districts in which the disease is endemic renders it highly improbable that my patient's ailment is of this nature. Lastly, the absence of the specific bacillus and of Mikulicz's cells almost conclusively disproves rhinoscleroma.

2. *Tertiary Syphilis*, owing to the various aspects it may assume in the throat, naturally suggests itself. Inquiry as to the patient's previous health yields no indication of his ever having contracted venereal disease; besides, this morbid process differs from tertiary syphilis in its perfect symmetry, in the absence of any tendency to ulceration, and in its being uninfluenced by iodide of potassium.

3. *Hereditary Syphilis*.—Owing to the want of corroborative evidence in the personal and family history of the patient, and because of the general dissimilarity of his pharyngeal manifestations to those observed in hereditary syphilis, the author believes that this disease may be left out of account as an etiological factor.

While unable to find a disease of which the sclerotic hyperplasia in the man is a manifestation, an analogous condition probably exists in subglottic hypertrophic laryngitis. This affection is usually characterized by the presence of pinkish, smooth, firm, symmetrical folds beneath the vocal cords, which develop slowly, apparently in consequence of recurrent inflammatory attacks, during which they become more or less swollen. If we now turn to the case under discussion we find folds of thickened tissue in the pharynx presenting characters similar to those just mentioned; we get a clinical history of his having been subject to sore-throat for years, and of permanent symptoms due to hypertrophic changes having set in only at a comparatively recent date; examination during an inflam-

matory attack revealed marked swelling of part of the affected region; and, lastly, A. Sokolowski's* account—which is probably the most detailed and thorough—of the histology of subglottic hypertrophic laryngitis might stand for that of the removed portion of the enlarged uvula, the sole difference being that in our case the deeper layer of the epithelium is not thrown into papille, but presents practically an even continuous surface, the columnar character of the deepest cells of the rete Malpighii, however, being maintained.

Considerable discussion has taken place as to the nature of subglottic hypertrophic laryngitis. In most text-books the causes mentioned are tuberculosis, syphilis and rhinoscleroma, the last being probably the commonest. Of 100 cases of scleroma recently reported by A. Baurowicz† thirty-four were affected with subglottic hypertrophic laryngitis. If the frequency of subglottic hypertrophic laryngitis in scleroma be coupled with its great rarity apart from this disease, it can be understood how certain observers who live where rhinoscleroma is prevalent—*e. g.*, P. Pieniazek‡ and Baurowicz, of Cracow—and who consequently see subglottic hypertrophic laryngitis comparatively often, maintain that it is *always* a manifestation of scleroma. On the other hand, Sokolowski, of Warsaw, who has also had an extensive experience of rhinoscleroma, denies this, and proves, incontestably, as it seems to the author, that subglottic hypertrophic laryngitis may develop independently of scleroma, tuberculosis and syphilis; he thinks that the morbid process is of a specific nature, the etiological factor being as yet unknown, but he suggests that hereditary syphilis may play a part. A. Kuttner§ reports a case of subglottic hypertrophic laryngitis in which there were no grounds for suspecting the presence of any of the infective diseases mentioned; he maintains, therefore, that this laryngeal condition may appear as an affection *sui generis* which he proposes to term the genuine form of chondritis vocalis inferior hypertrophica. F. H. Bosworth|| also states that there can be no question of a simple idiopathic inflammatory process in the subglottic region giving rise to marked hypertrophy, but he thinks that in most instances a diathetic condition is present. There are thus good reasons for according to subglottic hypertrophic laryngitis independent rank amongst the diseases of the larynx.

The facts brought forward in this paper, if correctly interpreted, prove (1) that the pharynx and naso-pharynx may be the seat of a sclerotic hyperplasia unconnected with syphilis, rhinoscleroma or other known infective disease; (2) that a similar morbid process may manifest itself beneath the vocal cords as subglottic hypertrophic laryngitis, and (3) that in the hyperplastic variety of hereditary syphilis the histological appearance closely resemble those of the above-described sclerotic hyperplasia. STCLAIR THOMSON.

* "Ein Beitrag zur Pathologie und Therapie der Chronischen Hypertrophischen Kehlkopfentzündung," *Archiv für Laryngologie*, Band ii, S. 68; also Band iv, S. 239.

† "Das Sklerom auf Grund der Beobachtung von 100 Fällen," *Archiv für Laryngologie*, Band x, S. 396; "Zur Aetiologie der Sogenannten Chondritis Vocalis Inferior Hypertrophica," *Ibid.*, Band vii, S. 340.

‡ Heymann's "Handbuch der Laryngologie," Band i, 1305

§ "Chondritis Vocalis Inferior Hypertrophica," *Archiv für Laryngologie*, Band v, S. 275.

|| "A Treatise on Diseases of the Nose and Throat," vol. ii, p. 529.

The Treatment of Nasal Polypus—LAMBERT LACK—*Journal of Laryngology*, February, 1901.

Our attention should be directed towards eradicating the bone disease. The patient should be anesthetized, and the ethmoidal region should be examined by the finger, both through the nose and also through the post-nasal space, to determine the extent of the disease. If the middle turbinate be present it may be removed and any large polypi with it. The lateral mass of the ethmoid should be thoroughly scraped away by means of a large ring-knife, such as Meyer's original adenoid curette. The finger is introduced from time to time to observe the progress, and the scraping is continued until all friable tissue has been removed. "Great caution must be used when the region of the cribriform plate is reached, but the whole inner wall of the orbit may be scraped away with impunity." The operation should be performed with the patient turned well over on his side, and in cases where the posterior part of the ethmoid is unaffected a large sponge may be pushed up into the post-nasal space. After the operation the bleeding is checked by packing the nose with a strip of gauze soaked in a glycerine iodoform emulsion. The gauze should be changed every second or third day and the nose irrigated.

M. D. LEDERMAN.

On the Use and Abuse of Nasal Sprays—DUNBAR ROY (Atlanta, Ga.)—*St. Louis Courier of Med.*, June, 1901.

According to the author the abuse of sprays consists in: 1. The medicinal substance used. 2. The frequency of its use. 3. The force of the spray.

Nasal sprays have no place for cleansing purposes in acute inflammations, but find their chief benefits in chronic conditions where there is an abundant mucus or muco-purulent discharge. The only solution, according to the author, which will accomplish proper cleansing, is one which is watery and alkaline in character. In his experience, oily sprays have absolutely no place in nasal therapeutics for cleansing pure and simple.

Sprays used for their stimulating qualities can be either watery or oily.

He has found a benzoinated oily menstrum, or one with a few drops of terebene in it, is by far the best.

A second abuse of sprays is the frequency of their use, which the author considers a great and growing evil among rhinologists. He holds the popular use of late of the menthol oily spray largely responsible for this error, and maintains that there exists a "spray habit" just as we find that of cocaine and morphine. He thinks that, though a valuable nasal therapeutic remedy, the harm done by menthol far outweighs the good.

The third abuse of the spray is its force. The author considers a compression of fifteen pounds a sufficient one. [This is about double the force many rhinologists have found advisable in the nasal fossæ. In the pharynx and naso-pharynx a greater one is often tolerated.—Ed.]

EATON.

Some Anomalies of the Ear Due to Errors in Development—GEO.

C. STOUT (Philadelphia)—*Journ. of the Am. Med. Assn.*, April 20, 1901.

The author reports a series of interesting anomalies of the auricle, and by courtesy of the *Journ. of the Am. Med. Assn.* we reproduce the illustrations accompanying the paper.

Figure 1 pictures the auricle of a boy of sixteen years without other defection in his development. The little nodule anterior to the tragus was probably formed by an auxiliary nodule on the

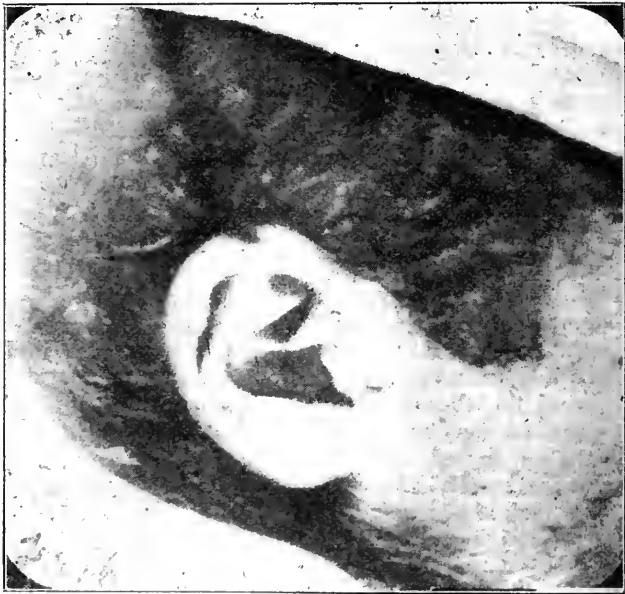


Figure 1.

mandibular arch. It is apparently composed of cartilage, fibrous tissue and skin, and could be removed without any unpleasant sequelæ.

Figure 2 is taken from a drawing from the ear of an Italian woman of otherwise normal development and in whose immediate

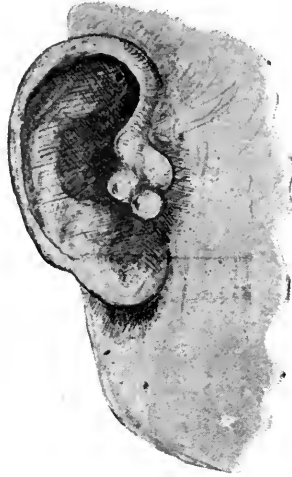


Figure 2.

ancestors no physical defects were noted. In this case four nodules are seen. _____



Figure 3.

Figure 3 is a case from the practice of Dr. B. A. Randall, due to failure of coalescence of the tubercles.

Figure 4, originally presented in the London *Lancet*, shows what was probably an auxiliary set of tubercles—about second cleft.

Figure 5 is taken from a new-born infant, which had no external nose; it had no eyes except a rudimentary one in the center of the



Figure 4.

forehead from which a horn projected. Other defects were present. In this case the tubercles also failed to develop.

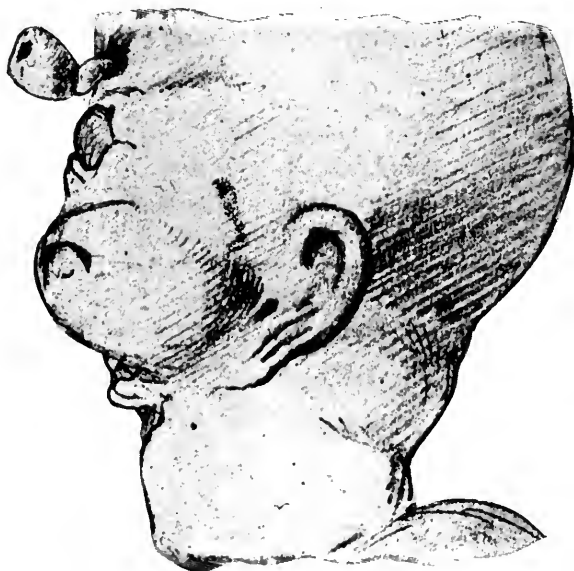


Figure 5.

Figure 6 is taken from an infant that lived ten days in which there were many other defects. It had hypospadias and a very

small but well-formed scrotum, and there existed a deformity like an auxiliary anus just at the point of sacrum. It had cleft palate, embryonic nose, large fontanelles, etc. In this case there was



Figure 6.

arrested development of tubercles. There was an auxiliary meatus due to failure of closure of walls of the hyo-mandibular cleft.

Rapid Growth of Aural Exostosis—W. R. H. STEWART, (Edinburgh).—*British Med. Journ.*, June 1, 1901.

The author reports case of a lady of middle age who had had a small exostosis in each meatus for some years. After a recent attack of influenza, accompanied by a good deal of pain in the ears, the exostosis in the left ear began to grow rapidly and extended right across the meatus touching the opposite wall.

F. W. FOXCROFT.

Emphysema of the Eyelid from Nasal Causes—BEAMAN DOUGLASS—*N. Y. Med. Journ.*, March 23, 1901.

A number of cases are reported in which the condition followed forcible blowing of the nose. An emphysema of the upper lid occurring as a wound accident, must arise from a direct perforation of the lamina papyracea of the ethmoid bone, which also forms part of the orbital wall.

During ethmoid operations the instrument fractures part of the orbital wall, and wounds and tears the mucous membrane lining the ethmoid cells. This allows a direct communication of air between the nose and orbit.

The author suggests to avoid the use of the curette in these operations as much as possible, as it is this instrument which is responsible for much of the traumatism at this particular site. The biting forceps is the better instrument to employ. Another rule to follow, is never to amputate any part of the middle turbinal, as it forms an important guide. The operation should be carried out along the outside of the turbinal, and if the bone itself is to be removed, it can be done later.

M. D. LEDERMAN.

A Case of Severe Mastoid Neuralgia—JOHN DUNN, (Richmond, Va.)—*The Virginia Medical Semi-Monthly*, April 12, 1901.

Severe neuralgia of the mastoid is met with from time to time; it may be reflex or strictly local in character; it may exist either with or without other visible concomitant conditions to suggest its cause; generally, there is a history of a more or less remote, acute—be it purulent or catarrhal—inflammation of the middle ear and its annexed antrum, the neuralgia appearing afterwards when the patient takes cold; it sometimes complicates simple abscess of the attic or acute empyema of the mastoid antrum and forces the surgeon to explore the mastoid, although in similar cases, without this neuralgia, he is satisfied with opening Schrapnell's membrane; it is in many, if not most, instances, uncontrollable by other than surgical means, which consist in all save the cases with a reflex origin for the neuralgia in opening the mastoid process, to which it readily yields in nearly all cases. In some cases, after persisting for weeks, the severity gradually subsides; the neuralgia has, however, a tendency to recur each time the patient is exposed to or takes cold. We have no way at present to accurately foretell in what condition we shall find the contents of the mastoid process in these cases. It is well to remove the cortex over an area one-third to half an inch wide, extending from the region of the fossa to the tip before mutilating the cells that we may in each case examine them carefully. The external incisions, unless we find contra-indications, should be closed by sutures at the time of the operation.

W. SCHEPPEGRELL.

Infective Sigmoid Sinus Thrombosis—C. R. DUFOUR (Washington, D. C.)—*N. W. Med. Journ.*, March 23, 1901.

The most common cause is through an infective inflammation from the middle ear, producing a thrombosis of the small veins leading into the sigmoid sinus, or by direct erosion of bone.

Among the symptoms which point to involvement of the sinus in suppurative disease of the middle ear are persistent hemicrania, fever, rigors, nausea and vomiting. The temperature is of a fluctuating character, with copious sweating and anxious appearance of the face. The rigors or chills appear early. These indications, however, may not be present at all. The fluctuating temperature is an important and significant symptom. Edema of the occipital region caused by an obstruction of the occipital and mastoid veins, and by a phlebitis of the vessels (Griesinger's symptom) is characteristic of the disease. When thrombosed the jugular vein may be felt as a cord in the neck to the inner side of the sterno-mastoid muscle. The most serious stage of the disease is that of disintegration and breaking down of the thrombus, as it exposes the patient to pulmonary infarctions and metastasis elsewhere.

The treatment in such cases is to expose the sinus, remove the thrombus, and, if same extends to the jugular vein, the latter must be ligatured and removed, if diseased, together with its tributaries.

M. D. LEDERMAN.

Lateral Sinus Pyemia and Cerebellar Abscess with Cheyne-Stokes Respiration; Recovery—H. F. WATERHOUSE—*The Lancet*, March 30, 1901.

The patient was a dental surgeon admitted into Charing Cross Hospital on April 17, 1899, with lateral sinus pyemia. He had been for many years a sufferer from chronic tuberculous abscesses in the region of the right hip, and had had a purulent discharge from both ears for the greater part of his life. In 1895 Mr. Waterhouse had operated upon him for a large supramastoid abscess on the right side, and shortly prior to admission Dr. Green had opened two abscesses of the right hip. On April 11th the patient felt ill; the temperature was 100° F., and the pulse was 100. On April 12th he had a rigor in a train. On April 13th he had a rigor of half an hour's duration and a temperature of 103°. On April 15th Mr. A. M. Shield saw the patient and diagnosed lateral sinus septic thrombosis, but was unable to decide upon which side the condition was. On admission to Charing Cross Hospital the patient's temperature was 104.2°, the pulse was 100, and the heart and lungs were normal. There were no pupillary changes and no optic neuritis. From this time to April 28th the patient had repeated rigors, the highest temperature was 105.2°, and a systolic heart murmur developed after continuous pain over the base of the heart whilst he was in the hospital. Cough was noticed a few days later, and the sputa was of prune-juice color. His condition became profoundly toxemic and apparently hopeless. Much valuable time was of necessity lost in waiting in the hope of determining upon which side the sinus was affected. At last, on April 28th, when it became clear that the time for operative interference with any hope of success was rapidly passing away, Mr. Waterhouse operated upon the left lateral sinus and internal jugular vein, dividing the latter between two ligatures and incising and clearing out the septic thrombus in the former. Recovery took place; nevertheless, on May 1st, Dr. J. W. H. Eyre, bacteriologist to the hospital, found streptococci in the blood. Everything went well until June 7th, when the patient was allowed to get out of bed. On June 8th complaint was made of headache, vomiting occurred, and the pulse fell to 56. Drowsiness increased, until on the evening of June 10th the patient was comatose, and there were double optic neuritis, Cheyne-Stokes respiration, and a pulse of only 50. It was then decided to explore the temporo-sphenoidal lobe and the cerebellar fossa on the left side. Unfortunately, the former was first attempted, with negative result. Respiration ceased entirely under even partial anesthesia. Owing to the patient's condition vigorous artificial respiration had to be resorted to, and the movement thus caused some laceration of the cerebral substance by the exploring-needle. Soon the pulse ceased to be perceptible, and, as the patient was obviously very near death, the exploring syringe was made to perforate the tentorium cerebelli from above. Immediately an ounce of fetid pus was obtained, the respiration and pulse recovering at the same instant. The left cere-

bellar fossa was now rapidly trephined and several drachms of pus were evacuated. Progress was henceforth most satisfactory, although there was for many days much word-deafness owing to injury to the temporo-sphenoidal convolutions. The patient was at the present time in better health than before his illness, and was in full practice as a dental surgeon. Speech was nearly perfect; he could now manage a gas and ether extraction, comprising from sixteen to twenty teeth and stumps and could walk ten miles, in spite of his lameness. Mr. Waterhouse alluded to the extreme difficulty that had existed with regard to the decision as to which lateral sinus was affected and the hesitation he felt in risking operating upon the wrong side. He considered that the endocarditis having developed whilst the patient was under observation, and the presence of streptococci in the blood, proved it to be of pyogenic origin. He regretted that he had not at once, in the second operation, trephined for cerebellar abscess, but gave cogent reasons for acting as he had done. Remarks were also made as to the difficulty in locating intracranial abscesses, and another case was related in which Mr. Waterhouse had first explored the cerebellum for an abscess which was situated in the temporo-sphenoidal lobe. This case, fortunately, also recovered.

STCLAIR THOMSON.

Mastoiditis Following Primary Tubercular Otitis Media—N.

SENN—*St. Paul Med. Journal*, June, 1901.

Case of a little boy operated on for tubercular mastoiditis, secondary to a primary otitis media tubercular.

The author is of the opinion that the facial nerve is frequently injured in such operations, "an accident invariably followed by permanent facial paralysis."

The mastoid cavity was vigorously scraped with a sharp spoon, and the cavity then filled with a ten per cent iodoform glycerine emulsion and packed with gauze.

STEIN.

Membranous Croup—L. T. POMS—*Alkaloidal Clinic*.

Report of two cases in which Vapo-Cresoline inhalations apparently relieved almost moribund patients.

F. C. E.

Further Observations on the Clinical Application of the Suprarenal Capsule—W. H. BATES (New York)—*Hot Springs Medical Journal*, April, 1901.

The author's statement that no hemorrhage is so severe from the nose which cannot be completely controlled by the suprarenal extract, and that the hemorrhage in "bleeders" is controlled, is evidently based on insufficient clinical observation. The reporter has seen many cases of nasal hemorrhage, especially of the active form, which did not yield to the use of suprarenal extract, and he has found it practically useless for controlling hemorrhage in "bleeders." Dr. Bates' method of treating "deafness" by "syringing the extract through the punctum of the lower lid down the nasal duct and allowing it to flow over the orifice of the Eustachian tube," gives the extract credit for gymnastic proclivities not often seen in rhino-otologic practice.

W. SCHEPPEGRELL.

The Treatment of Diphtheria Other than with Antitoxin—J. P.

CROZIER GRIFFITH (Philadelphia).—*St. Louis Med. and Surg. Journ.*, June, 1901.

The author believes it an error to put sole dependence on any one line of treatment and invites consideration of some of the hygienic and medicinal methods upon which we can depend as an aid to diphtheria antitoxin.

Under the head of prophylaxis, he remarks that it is a matter of repeated observation that the germs of the disease can often be found in the throat of a healthy nurse caring for a case of diphtheria.

For their own safety the most careful supervision must be kept over both the throats and noses of all members of the family, and the throats of those unavoidably exposed frequently gargled with antiseptic solutions.

As in many cases the disease begins in, or is confined to, the nose, this region should receive treatment in every case. The solutions may be applied by atomizer, though the syringe is more thorough. The solutions used should be those which check bacterial growth, or act as cleansers only, rather than those distinctly bactericidal, the latter being too powerful to be well borne.

In pharyngeal diphtheria solutions may be applied to the pharynx by the syringe, a swab or a brush. The author favors for this purpose a solution of hydrogen peroxide in full strength or slightly diluted, and immediately follows it with Löffler's solution on a swab and held upon the affected parts for a few seconds.

In laryngeal diphtheria the local treatment must be largely by inhalation, and the most useful remedy is steam. It is very important that *enough* vapor be generated. Either the room must be kept full of vapor by plunging red-hot iron, hot bricks, etc., into tubs shallow water, or the child must be surrounded by a croup tent and the air within it kept moist by a steam atomizer or a croup kettle. Home-made croup tents can be made by tying a broomstick upright to each corner of the crib, connecting the tops by cord and throwing blankets over the framework thus made.

The author believes that large doses of alcohol are frequently needed, and are well borne.

EATON.

BOOK REVIEWS.

Purulent Nasal Discharges: Their Diagnosis and Treatment. By HERBERT TILLEY, M.D., B.S. Lond., F.R.C.S. Eng., Surgeon to the Throat Hospital, Golden square; Lecturer on Diseases of the Nose and Throat, London Post-Graduate College and Polyclinic. Pages viii to 123, octavo, cloth, price, four shillings net. Publishers, H. K. Lewis, 136 Gower street, London, 1901.

In this carefully prepared and revised monograph the author presents a concise and practical account of suppuration of the nasal accessory cavities, with detailed consideration of the symptoms, diagnosis and treatment of these conditions.

This monograph is eminently practical and includes the most recent surgery and therapeutics of the accessory sinuses. A valuable feature of the volume is the author's account of his own practical experiences in the treatment of this class of cases.

The Diseases of the Respiratory Organs, Acute and Chronic. By WILLIAM F. WAUGH, A.M., M.D., Professor of Practice and Clinical Medicine, Illinois Medical College, etc. Pages 221. Price \$1.00 net. G. P. Engelhard & Company, Chicago, 1901.

The author herein advocates methods of treatment based upon the conception of the role played in acute inflammation of the vaso-motor nerves, and his belief that the future of scientific therapeutics lies in the study of pathologic conditions, and the influence of drugs upon them, rather than in the consideration of these maladies as pathologic entities.

Preference to alkaloidal medication, of which the author is an enthusiastic advocate, is given throughout the work. Several of the acute affections, hay-fever, acute laryngitis and acute coryza, are given but brief consideration, but the gist of the subject is retained. The question of laryngeal and pulmonary tuberculosis in their acute and chronic forms, is well though briefly considered. In all, this volume presents to the reader a very good idea of the value of alkaloidal therapy.

Histoire des Maladies du Pharynx (History of Diseases of the Pharynx) Part I—Graeco-Roman, Byzantine and Arabian period. By Dr. C. CHAUVEAU, Paris. Preface by Dr. du Castel, member de l'Académie de Médecine, Paris. Pages, 300; octavo, broch. Publishers: J. Ballière et Fils, 19 Rue Hautefeuille, Paris, 1901.

In a recent issue of *THE LARYNGOSCOPE* we had the pleasure of reviewing the first of a series of works on the pharynx by this author. This volume of 400 pages treated entirely of the anatomy and physiology of the pharynx and is perhaps the most extensive work on this subject extant.

The present volume, "*Histoire des Maladies du Pharynx*," is devoted entirely to a consideration of the Graeco-Roman, Byzantine and Arabian periods and forms but the first section of this classic treatise of the pharynx.

As a work of reference to all writers in our special field of medicine this great work of Chauveau should be of much interest and value. M. A. G.

Syphilis; Its Diagnosis and Treatment. By WILLIAM S. GOTTHEIL, M.D., Professor of Dermatology and Syphilology, New York School of Clinical Medicine; Dermatologist to the Lebanon and Beth-Israel Hospitals, the West-Side German Dispensary, etc. Profusely Illustrated. Pages 216. Price \$1.00 net. G. P. Engelhard & Company, Chicago. 1901.

The universal distribution and prevalence of syphilis and its intimate relations and effects on every special subdivision of medicine, renders this subject of immediate and practical interest to the general practitioner and specialist alike.

This volume of 224 pages contains a concise résumé of the most recent research regarding the natural history of this disease and the best methods of combating its manifestations. The volume contains in greater part the personal views and experiences of the author. M. A. G.

Atlas der Krankheiten der Nase, ihrer Nebenhöhlen und des Nasenrachenraumes. By DR. P. H. GERBER, of Königsberg. Issued in 6-7 parts, each containing 5-6 lithographic plates, with descriptive text. Price per part, 6 marks (\$1.50). Published by S. Karger, Karlstrasse 15, Berlin, Germany, 1901. American agents, Lemcke & Buechner, 812 Broadway, New York.

Four of the six parts of this atlas have now appeared. The first contains anomalies, septum deviations, atresia and synechia and diseases of the septum.

The second considers atrophic and hypertrophic rhinitis in its various forms.

Part three pictures adenoid vegetations in its various forms, and the varieties of nasal and post-nasal polypi.

In part four are found the various neoplasms of the nasal passages, fibroma, osteoma, sarcoma, carcinoma, cysts, lipoma, rhinoliths and foreign bodies.

We have expressed our favorable comments in a previous review of the clear, lithographic reproductions and good coloring of these plates.

M. A. G.

Atlas der Nasenkrankheiten. (Atlas of Diseases of the Nose). By Hofrath DR. ROBERT KRIEG, of Stuttgart, Germany; 38 Chromo-Lithographic Plates, 475 Figures, with descriptive text in German and English. Complete in (7) seven parts, each part containing (6) six plates. Price, 42 marks (\$10.50). Publisher, Ferdinand Enke. American agents, Lemcke & Buechner, 812 Broadway, N. Y.

The Krieg Atlas, complete in seven parts, presents the clinical pictures observed in nasal and post-nasal pathology in a most extensive manner by excellent plates and concise descriptive text. This atlas has the additional advantage of presenting simultaneously the German and English texts explanatory of each plate, and as such it is especially commendable to our American and English readers.

M. A. G.

Progressive Medicine, Vol. II, June, 1901. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 470 pages, with 81 engravings and one full-page plate. Lea Brothers & Co., Philadelphia and New York. Issued quarterly. Price, \$10.00 per year.

The present volume of this series contains but little matter directly referable to laryngology or otology, yet the important chapters on blood, diabetes mellitus, and hemophelia present many valuable suggestions.

The chapters on surgery of the abdomen and gynecology form the bulk of the volume. The concluding chapter on ophthalmology, by Edward Jackson, may be of much interest to many of our readers.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

THE NASAL SEPTUM.*

BY WALTER J. FREEMAN, M.D., PHILADELPHIA.

In view of the prominent position which operations on the septum are at present taking in rhinological literature, it would seem important that more careful study should be devoted to its anatomy, especially embryological and pathological. Without an intimate knowledge of the structures entering into the formation of the septum, and of the manner in which they are affected by mal-development, disease, etc., intelligent treatment is hardly possible.

The nasal septum reaches from the apex of the nose to the rhinopharynx and separates the interior into two fossæ. Anteriorly it supports the external nose, and the part under the nasal bones may be wholly of bone, partly cartilaginous or entirely cartilaginous. Its posterior edge is almost perpendicular, but varies frequently in this respect, and this variation must be looked upon as a lack of development, for in infancy the edge is almost horizontal. While the vomer and the perpendicular plate of the ethmoid bone constitute the greater part of the bony septum, the crests of the superior maxillary, the nasal and palate bones, and the rostrum of the sphenoid bone also enter into its formation. In addition to these, we have the inferior vomer, a small bone lately described by Rambaud and Renault, which rests upon the intermaxillary bones and forms their crest.

The cartilaginous portion of the septum is composed principally of the quadrangular or septal cartilage; in addition we have the

* Thesis presented to the American Laryngological Association, at New Haven, Conn., May 27, 1901.

columnar cartilage, and the middle projections of the upper lateral and lower lateral cartilages, but these are comparatively unimportant. The unossified strip of cartilage lying between the vomer and the perpendicular plate of the ethmoid bone in the vomer sulcus is a process of the quadrangular cartilage, although here named the spheno-ethmoid cartilage, as if independent. In a small percentage of cases, a strip of cartilage, instead of the perpendicular plate of the ethmoid, supports the nasal bones, but this also is simply a part of the quadrangular cartilage.

The membranous septum is that portion at the apex of the nose between the two vestibules not occupied by the cartilages.

The mucous membrane of the septum presents certain physical peculiarities. In the first place, in the upper half, or so-called olfactory region, its color differs from that of the lower half, or respiratory region, in being paler and somewhat yellowish in tone even during life, owing to the pigment deposited in the epithelial cells. In the second place, the mucous membrane of the septum varies greatly in thickness. Thus it is thicker at the articulations of various bones and cartilages, and also in the lower half of the nose, whilst it is quite thin in the vestibules and in the olfactory region. Of special interest to us from a practical standpoint, however, are the following physiological thickenings of the septum. Just below the anterior end of the middle turbinal we find the so-called tubercle of the septum, an enlargement the size of a dime. This is formed by a deposit of gland structure at this point, though we also find a thickening of the underlying cartilaginous or bony framework in the shape of a fusiform enlargement. Bresgen and Mihalkovics claim that erectile tissue also enters into the formation of the tubercle, but Zuckerkandl observes that this description of Bresgen's is on a par with many of his so-called discoveries, and that no erectile tissue can be demonstrated. The tubercles of the septum frequently become enlarged and interfere with the direct current of air through the olfactory clefts. Their importance lies also in their hindering proper inspection of the upper regions of the nose, and not infrequently they are mistaken for deviations of the septum, or, by the careless observer, for enlargements of the middle turbinal, or even for polyps. Other more or less constant thickenings of the mucous membrane are found at the posterior portion of the septum. These are the so-called septal folds, parallel ridges of mucous membrane, especially prominent in the six-month embryo, but often hypertrophied in adult life, even so much so as to interfere with the patulency of the choanæ.

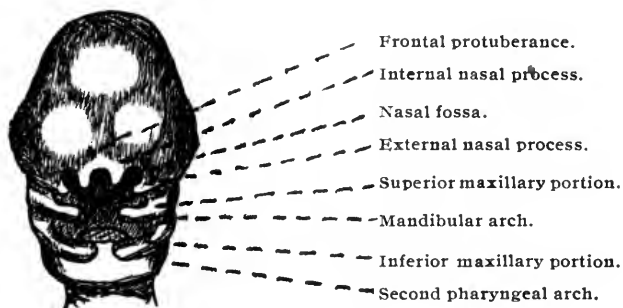
In one case I found the enlargement so great that it projected into the mouth of the Eustachian tube, and was probably the cause of the otitis media present on that side.

At the articulation of the vomer with the quadrangular cartilage the latter often becomes deformed. At times it thickens on both sides, at times bends and becomes hook-shaped, and frequently slips past the vomer, or, in other words, becomes dislocated. At times the alæ of the vomer flatten out and the cartilage unites directly with the vomer, in which case ridges usually develop on one or both sides of the septum, being formed, as Krieg asserts, by the squeezing outward of the cartilaginous strip in the vomer groove.

On the lower part of the septum may usually be found on each side a membranous cul-de-sac, 2-9 mm. in length, called Jacobson's organ. These lie on the quadrangular cartilage just above the anterior nasal spine, in front of the anterior dental canals, 22 mm. from the naso-labial junction, and 8 mm. from the floor of the nose. The openings of these accessory organs of olfaction, 1 to 1½ mm. in diameter, are directed forward, and cases are on record where the openings have been probed during life. In certain of the mammalia they are supplied with olfactory epithelium and filaments of the olfactory nerve, and in these animals the organ is enclosed in a firm capsule, Huschke's cartilage. In the human embryo, Kölliker was able to demonstrate Jacobson's organ, even if only rudimentary, in every case he examined. In one case, however, he found it present in a child of eight weeks, in whom it was well developed and supplied with an olfactory filament. Although Huschke's cartilage is also present between the crest of the superior maxillæ and the vomer, it remains rudimentary in man or is reduced to a cartilaginous ridge running in the direction of the upper edge of the vomer. Indeed, Zuckerkandl discovered certain cartilaginous growths in this region, completely surrounded by perichondrium, proving that they were not the spurs and ridges so commonly located here on the septum, but separate cartilages, and more than likely Huschke's cartilages, here, however, termed the vomer cartilages.

Embryonic Development.—In the embryo, we notice at the beginning of the second month, as the first step in the formation of the nose, a slight groove appearing at either side of the frontal protuberance. Two projections, nasal processes, now develop on

each side, the external pair forming the outer walls of the nose the internal developing into the septum:



Embryo at one month, partly diagrammatic.

The mandibular, or first pharyngeal, arch divides into two parts, the superior uniting with that of the opposite side to form the upper jaw, while the lower jaw is formed by the union of the inferior maxillary portions. The nasal processes, slightly diverging, grow downward, and finally reach the floor of the nose, which is now, at the tenth week, formed by the union of the two superior portions of the mandibular arch. The fact of the septum in the embryo being formed of two parts is found to exert an influence throughout, though the internal processes now coalesce. Thus, according to Rambaud and Rénault, at the end of the second month of intra-uterine life, ossification begins on *both* sides of the septum, which up to this time consisted entirely of cartilage. In the third month these ossification centres unite to form the vomer, but the tendency to remain separate still persists, for at each edge, except the posterior, there are deep grooves left where the two plates do not unite. Into these grooves fit the perpendicular plate of the ethmoid bone anteriorly, the rostrum of the sphenoid bone above and the nasal crests of the superior maxillary and the palate bones below. Thus the vomer is locked securely in its place by the surrounding bones, except anteriorly, and, consequently, it is here that curvatures of this bone are usually found.

The perpendicular plate of the ethmoid bone does not begin to ossify until the sixth month of infancy, the ossification, starting from

the body of the ethmoid, reaches the vomer in the third year, and the process is completed about the sixth year. This fact, Zuckerkandl states, explains why marked deformities of the septum so rarely appear before the seventh year; but it should be remembered that deviations and spurs may be found in very early childhood. I have seen these deformities of the septum in the new born, and Mihal-kovics claims to have found them at the third fetal month.

When the ossification of the perpendicular plate reaches the vomer the process usually ceases, leaving a strip of the primitive cartilaginous septum in the groove between the plates or alæ of the vomer. This strip of cartilage, which often persists in late adult life, frequently extends from the quadrangular cartilage to the rostrum of the sphenoid bone, and, as it is simply a prolongation of this cartilage, it is named the spheno-ethmoid cartilage, or sphenoidal process of the septal cartilage. The above-mentioned sulcus, or groove, was found by Zuckerkandl in 62 per cent of adults, although at times only as a trace, and he states that as long as it persists, spurs and ridges are not so apt to develop. The sulcus is in reality a canal formed by the growth of the wings or alæ of the vomer. It is, however, not a perfect canal, but fenestrated here and there, on one or both sides, and this probably influences the size, shape and position of spurs and ridges.

According to Disse, in the ninth month of embryonic life the hard palate lies above the level of the Eustachian tube mouths; at birth it is on the same plane, while later it lies considerably below. *This is due to the downward growth of the hard palate.* Thus it appears likely that the elevation of the hard palate, so often seen in adult life, is a lack of development, and is, therefore, an embryonic type. I wish to emphasize this point, and for this reason shall refer to it later. This descent of the hard palate is made still more evident by recalling that the choanæ in the infant are almost round, while in the adult their perpendicular axes are twice the length of the horizontal. This high position of the hard palate in infancy is of practical interest to us, for the inferior meatus is thus nearly obliterated, and the respiratory function is carried on chiefly through the upper part of the nose. With such a restriction of breathing space, it is no wonder that a simple cold in the head is of such importance in the young child, and is especially dangerous in the case of a nursing infant.

The ossification of the perpendicular plate of the ethmoid bone does not always progress to the same extent anteriorly. Zuckerkandl states that in about 49 per cent of the cases it reaches only to

the middle of the bridge of the nose; in 38 per cent to the lower third; in 10 per cent it reaches only to the upper one-third of the nasal bridge, and in 3 per cent it supports only the nasal spine. Now and then cases will be found where the perpendicular plate projects far outside of the pyriform aperture, or, on the other hand, it may not reach even to the top of the nasal spine. A striking example of each of these varieties may be seen in the collection of skulls in the Mütter Museum at the College of Physicians. Thus in many cases the bridge below the nasal bones rests upon cartilage only, an important point to remember in explaining the cause of certain deformities of the septum. In such cases even a slight blow on the nose, insufficient to break the nasal bones, may readily damage the cartilage, producing either a complete fracture, a green stick fracture, or a hematoma, which may lead to abscess and destruction of the cartilage.

In the infant the bridge is low and undeveloped, and the openings are on a plane with the face, the apex being tipped upward. As the septum develops, the bridge is elevated and the openings are directed downward; for this reason an arrest of development of the perpendicular plate of the ethmoid bone would give rise to the deformity known as pug nose.

Diseases of the Septum.—Of the many pathological conditions of the septum, the following are the most important:

1. Deformity, which we may subdivide into
 - a. Deviations,
 - b. Dislocations,
 - c. Ridges and spurs.
2. Hypertrophy,
 - a. Of the tubercles,
 - b. Of the septal folds,
 - c. Of the mucous membrane in general.
3. Atrophy, leading to deformity of the external nose.
4. Hematoma, followed by
 - a. Abscess, which may lead to
 - b. Perforation.
5. Ulceration, leading to
 - a. Perforation, and often to
 - b. Synechia.
6. Vascular dilatation.
7. Synechia.
8. Lupus, Tuberculosis and Syphilis.
9. Tumors.
10. Anomalies.

1. Before taking up the deformities of the septum, I wish to lay particular stress on the fact that, according to Broca, with the exception of the ears, there is no part of the body which exhibits more strongly the influence of heredity than the nose, and it is interesting to note that these characteristics do not make themselves evident until the time of puberty.

Deformities of the septum are due either to maldevelopment, traumatism, or disease, and this is probably the order of the frequency of the causes.

a. Deviations of the Septum.—According to Zuckerkandl, after the seventh year 60 per cent of all cases examined by him had deviated septa. Mackenzie, in over 2,000 skulls, found the bony septum deviated in about 77 per cent, and suggested that the cartilaginous portion also had probably been deviated in many of the cases where he found the *bony* septum straight. While deviations are most commonly confined to the anterior two-thirds of the septum, Jurasz and Stier found the posterior third deflected forty times in 300 cases examined by them post-mortem. In 1,657 skulls, in which Mackenzie found deviations of the bony septum, it was deflected to the left in 838, to the right in 609, S-shaped in 205, and irregular in 5. Note that Mackenzie found the septum more frequently deviated towards the left, while other observers, mostly clinicians, find deviations towards the right by far the more common. We must not forget, however, in looking at this apparent discrepancy, that when the bony septum is bent to one side anteriorly the cartilage is usually deviated in the opposite direction. Of 1,061 cases of which we have records regarding this point at the Polyclinic Dispensary, the cartilaginous septum was deviated to the right in 427, to the left in 197, S-shaped in 44, irregular in 45, thickened in 182, fairly straight in 40, and had a spur or ridge alone in 126. While it would, at first glance, seem that we should place more reliance on the statistics given by Mackenzie, because in our examinations during life we cannot so well appreciate the true anatomical deformities of the septum, especially so on account of the frequency with which the concavities are filled up with thickened mucous membrane; on the other hand, in considering his results, we must not forget that the cartilaginous septum is usually distorted or destroyed, and the bony septum warped or altered in shape in the dried skull.

Etiology.—It is unlikely that the external influences, such as using the right hand in blowing the nose (Beclard), the habit of sleeping on one side (Welcher), or of perpetually boring with the finger in one side of the nose (Colquet), have anything to do with the develop-

ment of deviations of the septum. Many deformities are due to inherited tendencies, and begin, therefore, in embryonic life, and this, I think, accounts for those deviations, ridges, etc., which are discovered in the embryo or the infant.

In weighing the importance of trauma in causing deformities of the septum it should be remembered that the nose, being the most prominent feature of the face, is more exposed to injury. Thus it follows that man, by reason of his more active life, would be more apt to have traumatic deviations and deformities than woman. Jurasz has given us data on this point, for in a group of 193 cases of deformed septa, probably due to injuries, 132 were in the male.

Except in the instances where deformities of the septum are caused by traumatism or disease, we must look upon them for the most part as the result of evolutionary, or, perhaps, more properly speaking, of devolutionary changes. The external nose of certain peoples, the African negro, Egyptian, American Indian, and others, is more or less characteristic, and is the result of centuries of exclusiveness, which thus preserves the purity of the races. The high or leptorhinc nose of the dolichocephalic head needs a greater development of the septum than the low nose in the brachycephalic type; consequently, in the intermarriage of different races, should the nose tend to follow the leptorhinc character, say, of the father, while the rest of the facial bones follow the platyrhinc type of the mother, there must necessarily be a bending of the septum, locked, as it is, in a frame already ossified. Broca, who has given special attention to the ethnological study of the nose, finds that when one race has conquered another, the nose, as generations go by, begins to follow the type of that of the more numerous race. It is curious to note that the prominent nose of the Roman was almost always deviated while that of the American Indian is almost always straight. May we not, however, argue that the Roman nation was a fast degenerating race, and that there was already a great admixture of foreign elements. In this country, and, in fact, in all civilized lands, the mingling of the races is very great, and this is undoubtedly one of the principal causes for the prevalence of septal deformities. I do not mean to assert that this is the only, or even the most common cause, or that the nose is perfect in form in the pure races, for injury, disease, etc., as before mentioned, play a prominent rôle in the production of both external and internal deformities.

The chief cause of deviations, and probably of many other deformities of the septum, is, I believe, *the lack of development of the hard palate*. Trendelenburg was, perhaps, the first to associate the

high-arched palate with deformity of the septum, but did not, so far as I can learn, consider it due to a lack of development of the maxillary bones. Loewy expresses somewhat the same idea, but regards the Gothic, or high-arched palate, as of rachitic origin. Zuckerkandl rather scouts this idea of Loewy, and says that he has been unable to associate rickets with deviated septa, and that it is chiefly the lower jaw, not the upper, which exhibits the rachitic influence. On the other hand, it is in the every-day experience of us all to find the high-arched palate associated with a deviated or otherwise deformed septum. Thus in 302 cases of high-arched palate I examined lately, there were twelve only where there was no marked deformity of the septum. Here, then, we have 96 per cent of deformed septa, which shows that there is undoubtedly a very close relationship between the high arch and septal deformities. One must not, however, in drawing conclusions as to the relationship between the Gothic-arched palate and deformities of the septum, consider that every high arch is an abnormal one. In studying the skulls in the Mütter collection, I found that a perfectly straight septum was not uncommonly associated with a high arch. This, however, was chiefly in dolichocephalic heads in which, with the high, narrow skull, there was associated a high, hard palate, and, in spite of the latter's position, the choanæ were also very high and narrow. I would add, however, that the skulls were those of non-Europeans, in whom, as Zuckerkandl has pointed out, one finds deformities of the septum much more infrequent than with us. As we have seen above, the infant hard palate is of the Gothic type, and anything which interferes with the full and perfect development of the child prevents also the development of the hard palate and consequently its descent. Indeed, as years go by, the Gothic arch becomes more and more peaked by the further development of the alveolar processes and the eruption of the teeth. On account of the high position of the palate, the septum must bend or twist, accommodating itself to the boundaries imposed by the unyielding framework of the bones with which it articulates. Another point in favor of this view is that mentioned by Welker, that in some cases there is a descent of one of the superior maxillary bones, the other remaining high-arched, in which case the convexity of the deviation is toward the lower.

This, therefore, is the explanation I would advance as to the manner in which certain, and probably a very large proportion, of the deformed septums are produced, and it leads us naturally to the question of the association of the Gothic-arched palate with adenoids.

It has always seemed to me absurd to say that, in cases of adenoids, the high-arched palate is caused by "increased atmospheric pressure on the roof of the mouth permitted by mouth-breathing;" or that, as another writer asserts, "the upper lip and cheeks falling heavily against the sides of the upper jaw, and pressing these parts together, narrows the jaws and forms the high Gothic-arched palate." Adenoids are one of the commonest and most manifest causes of lack of development in a child, and, occurring usually at a time when the hard palate should descend, interfere with this and almost invariably lead to deformity of the septum. We should not neglect to mention another form of deviation caused, as Zuckerkandl asserts, by the outgrowth of a large, sharp ridge on one side of the septum. The deviation is of quite common occurrence and is angular in shape, the concavity following the direction of the ridge.

Varieties.—The varieties of deformities of the septum are indeed endless. In addition to the simple scoliosis, in any direction from horizontal to perpendicular, and of double scoliosis, or S-shaped deviations of all degrees, many deformed septa are found to which it is impossible to give any more definite description than to say that they are irregular.

b. Dislocations.—Complete or partial dislocations of the quadrangular cartilage and of the perpendicular plate of the ethmoid bone are not uncommon, but they are more often found associated with fractures and deviations than occurring independently. At times the dislocated portion, after slipping from its articulation, continues to grow into one fossa, forming a characteristic ridge, while the edge of the vomer, or more likely the spheno-ethmoid cartilage, unopposed by the ethmoid plate or the quadrangular cartilage, develops a ridge on the opposite side. In certain cases the dislocations as mentioned above seem frequently to be due to an extensive deviation of the upper septal section, where the over-development is so great that the plates slip by each other instead of simply bending upon themselves as more commonly observed. Dislocations or even deviations of the quadrangular cartilage may be followed by a depression of the bridge below the nasal bones, the upper lateral cartilages being without their normal support.

Not infrequently we come across dislocations of the columnar cartilage, a small cartilage found between the columna and the membranous portion of the septum. Such dislocation may be brought about by a deviation of the quadrangular cartilage in which the tip of the nose does not follow the general direction of the internal deformity. The cartilage projects somewhat outside the nostril

and being covered by its muco-cutaneous covering, on which ramify dilated blood vessels, it is very disfiguring. The condition, however, amounts to little, as the pieces can readily be excised and the edge of the wound united by suture.

c. *Ridges and Spurs*.—According to Zuckerkandl, ridges and spurs are found in thirty-five per cent of Europeans, but only in fifteen per cent among the pure races. "These do not develop so long as the vomer possesses a well formed sulcus between its alæ. When, however, the ossification of the perpendicular plate of the ethmoid bone has so far progressed that the vomer sulcus disappears, its further development causes outgrowth at the articulations." It is interesting to note here that this obliteration occurs in about one-third of all cases under seven years of age, probably one of the chief causes for the development of spurs and ridges in early childhood. According as the spheno-ethmoid cartilage develops on one side or the other, ridges are formed on the corresponding side of the septum, probably influenced by the position and size of the fenestræ in the canal of which we spoke, and through which the outgrowth probably takes place. Spurs are developed in the same way, by excessive development of the cartilage at a circumscribed place, as through a smaller opening, and, as the vomer alæ and the edge of the perpendicular plate of the ethmoid are pushed out at the affected spot, the spur is enclosed in a bony capsule. These parts may persist as distinct layers, or the spur, becoming bony, may unite with the vomer and the ethmoid plates covering it, and thus form a solid bony spur.

The ridges produced by fractures or other injury may usually be distinguished by their position, from those formed by maldevelopment the latter being always associated with the articulations. The generally accepted idea that the majority of ridges, etc., are produced by fracture, has been shown by Zuckerkandl to be founded on insufficient data. In this particular he notes that but little callus is thrown out around the fractured portions, and that whatever deformity exists is produced by the actual displacement of the fragments themselves.

2. *Hypertrophy*.—The most important hypertrophies of the septum, those of the tubercle and of the septal folds, have already been mentioned. There is, however, another condition, that of hypertrophy of the mucous membrane on various portions of the septum, of which a few words should be said. This frequently occurs as a thickening of the mucous membrane in the concavities of deviations, filling them up so that there seems to be merely a thickening of the

septum instead of a deformity of the underlying hard parts. Again there may be a general hypertrophy of the mucous membrane over a considerable portion of the septum, a condition difficult in life to distinguish from the deformity described by Kyle as a splitting of the cartilage, which is now, however, recognized as a failure of the cartilaginous plates to unite.

3. *Atrophy*.—Deviation of the septum, though not strictly speaking a cause of atrophic rhinitis, in some particulars bears a very close relation to it. Thus we find this disease further advanced on the more roomy side of the nose, and this roominess is partly due to deviation of the septum. It is of interest to note that the correction of such a deviation seems to have a decidedly favorable effect in hindering the advance of the disease. In atrophy of the septum the microscopic examination has shown that not only is the mucous membrane degenerated and the glands destroyed, but there is also, in advanced cases, a degeneration of the cartilage itself, with such a shrinking that the bridge of the nose is flattened. This produces the characteristic appearance of the face familiar to us all in this disease.

4. *Hematoma*.—Hematoma, or blood cyst of the septum, must be looked upon as the beginning of an abscess, as that is its usual termination. We may have as a variety of this a collection of serum instead of blood in the cyst, but its termination is usually the same. Although hematomata are most frequently caused by traumatism, idiopathic cases are reported. Abscesses of the septum have also been found to arise as a result of typhoid fever, erysipelas, etc., but these probably started as abscesses and not as hematomata. The hematoma consists of a collection of blood, as a rule between the perichondrium and the quadrangular cartilage, or between the cartilaginous plates which are united by diplotic structure. Either as a result of fracture of the cartilage, permitting a communication between the two sides of the nose, or because of the rapid breaking down of the cartilage, there is formed a similar collection of blood or pus beneath the membrane in the opposite fossa. Of the six cases of which we have full records in the Dispensary of the Polyclinic, two were in the first stage (hematoma), the third was a simple collection of serum, while the others were fully formed abscesses. In all there was free communication between the collections on both sides of the septum, readily proven by the ease with which they were evacuated through an incision on one side, for in no case was it necessary to incise the cartilage. It is, therefore, most improbable that the collections could have formed between the cartilaginous plates, asserted by Heymann and others to be the usual course; cer-

tainly not in the first three cases, for necrosis of the cartilage could hardly have taken place so early. We have already seen that a light blow on the tip of the nose may readily break the septal cartilage and, should this not be sufficient to break the lining membrane, the blood from the broken vessels would naturally collect beneath the perichondrium, and be distributed through the crack in the cartilage, thus forming nearly symmetrical swellings on both sides of the septum. The blood, if infected, forms an abscess which may result in more or less destruction of the cartilage, and, unless it is early evacuated, falling in of the the tip of the nose may readily occur. It is important to remember that even though considerable destruction of the cartilage results, it may be regenerated unless perforation or disorganization of the perichondrium occurs. In one case lately seen in private practice, such widespread necrosis had occurred before the patient came under treatment, that but little cartilage could be felt by probing through the wide incision. At the end of one month the cartilage had completely regenerated, and, it is of great interest to note, a marked deviation occurred in spite of all effort to prevent it.

5. *Ulcerations.*—While these are very common, and almost always of traumatic origin, a few occur as the result of typhoid and other fevers, and of tuberculosis and syphilis. Beginning as an excoriation of the mucous membrane covering the cartilage just within the inner naris, the process may invade the deeper-lying structures until the cartilage, deprived of its nourishing membrane, necroses, and the soft parts on the opposite side are attacked and destroyed. Ulcer of the septum may progress, therefore, until a perforation between the two fossæ is formed, and the destructive process may invade more and more of the separating wall, until the support of the nose is weakened and the bridge becomes depressed. The great majority of ulcerations of the septum are started by the irritation produced by picking at the nose. The tendency which dust, etc., has to collect in the vestibules, and the discomfort occasioned by its presence, seems to call for its forcible removal; and thus it frequently happens that the membrane of the septum is injured, and once injured, crusts form which it requires still greater force to remove. This is probably the chief reason, then, for the ulcer arising at this point on the septal cartilage, a point just within reach of the finger tip, and the explanation of its seemingly progressive nature. At times we meet with cases where, though the cartilage has been perforated, the soft parts on the opposite side have resisted, the destructive process has ceased, and the wound becomes cicatrized.

Again, we have met with cases where only a superficial layer of cartilage has necrosed and peeled off, the wound healing and leaving the cartilage simply weakened but not perforated.

The simple ulcer of the septum readily heals when the cause of irritation is removed, unless the deeper structures are involved, when perforation readily, indeed, almost unavoidably, occurs.

It has been asserted by several writers that congenital perforations occur in a small percentage of cases, and that they are to be looked upon as the result of a lack of development. From a study of the embryological growth of the septum, it is easy to see that such an opening may be produced by an arrest of development, the front portion of the septum being developed from the frontal protuberance, the posterior portion from the superior maxillary process; but, as the cases of reported congenital perforations were discovered only in after years, the diagnosis rested merely on theory with, I think, no good reason to back it.

6. *Vascular Dilation.*—This is one of the most frequent conditions with which we have to deal clinically. Giving rise, as it does, to recurrent attacks of epistaxis, which range from a slight trace of blood, on blowing the nose forcibly, to grave hemorrhages so frequently repeated as to threaten life, patients often come to us from this symptom alone. Occurring on one or both sides of the septum, the blood may flow forward through the external nares or pass back into the rhino-pharynx, and thence into the stomach and bowels, or into the larynx and trachea. In the latter case, the patients may be greatly alarmed, for not infrequently a cough exists at the same time, or accompanies the hemorrhage, and they regard the bloody sputum as an evidence of pulmonary trouble. The determination of the point of bleeding, and the cause of the condition, is not always easy. In the majority of cases the epistaxis arises from dilated vessels on the quadrangular cartilage just within the naris, and this region should first be examined. If the patient comes while the bleeding is still going on, or shortly after it has stopped, we can usually determine its source by wiping away the blood and watching to see the general direction from which it flows, or by slowly removing the coagulum and noticing the point from which the bleeding starts afresh. In some cases it may be necessary to rub the surface briskly with a cotton-armed probe, endeavoring to set up a renewed bleeding in order to discover the ruptured vessel. Epistaxis may be due, on the one hand, to such conditions as plethora, anemia or vicarious menstruation; or, on the other, to cardiac, hepatic or renal trouble; but its most common cause,

is, as has been said, the rupture of dilated vessels on the lower part of the quadrangular cartilage. The excoriations so common in this location lead to dilation of the surrounding vessels, and exertion or trauma, as from picking or forcibly blowing the nose, readily occasion the epistaxis.

7. *Synechia*.—The occurrence of synechia uniting the septum to one or more of the turbinals is not uncommon. We will pass over the various forms of occlusion of the nasal passages, such as the more or less complete atresia of the choanæ, which are occasionally bony, and then always congenital, and will direct attention simply to the band-like bridges stretching across the fossæ. In almost all cases they are the result of adhesive inflammation, but a few, and these bony, are due to congenital maldevelopment, associated as they are with asymmetry of the skull. To the twelve cases reported a few years ago, I could add a dozen or score more which I have personally studied. While many have been reported by other writers, Zuckerkandl described twenty-six, which he discovered post-mortem. In Zuckerkandl's cases, the synechiæ were mostly in the upper regions of the nose, and, therefore, not easily seen in a clinical examination. The reason for the frequency of the occurrence of such union here may be readily understood by recalling how close together the membranous surfaces above the middle meatus are normally. Those that I have found have been mostly in the lower half of the nose, though some have occurred between the middle turbinal and the septum. A few seem to have formed as the result of a long-continued pressure of a septal spur or ridge against the opposite turbinal, but the majority were evidently occasioned by the adhesion of excoriated surfaces following membranous rhinitis, operations on the septum, or cauterization of the turbinals. In several cases I have found them occurring as the result of syphilitic ulcerations. In all these cases, however, the method of their formation was the same, *i. e.*, a union taking place between two adjacent surfaces which have been denuded of the epithelial layers either through traumatism or severe inflammation. The size of these synechiæ varies from a thread-like band to a thick fleshy union, extending almost the entire length of the turbinal. In a case lately seen it was necessary to pass a catheter through the superior meatus as a guide, and saw through the adhesion, which extended almost the whole length of the middle turbinal.

8. *Lupus, Tuberculosis and Syphilis*.—While lupus and tuberculosis of the septum are rare conditions, it is well to bear the

possibility of their occurrence in mind. The former at times leads to perforation of the septum, and also to great destruction and sinking in of the external nose. The latter may also occur as an ulceration, but it is almost always secondary to a general tuberculosis. The course of the first two diseases is but little influenced by treatment, which is an important point in distinguishing them from syphilitic affections. Syphilis is a much more common disease of the nose, and, as a rule, invades the septum in the form of a gumma. The bony plates are usually the first points to be attacked, but the process spreads in all directions and readily involves the cartilages as well. This tendency of syphilis to invade the bony portion of the septum gives us one of the most important points in distinguishing the perforations caused by this disease from those mentioned under simple ulcerations of the septum. Cases of syphilis of the septum, as a rule, seek assistance only after considerable destruction has taken place, and then because of the difficulty in breathing occasioned by the gummatous swelling, or because of the later-appearing discharge of frightfully offensive pus from the necrosing bone. While the progress of this disease is, in the majority of cases, readily influenced by medicine, if it has proceeded to a point where the bone is extensively necrosed, surgical treatment must be employed to aid in the separation of the sequestrum. The destructive process is now and then so extensive that practically the whole of the septum is destroyed, and yet it may happen that the external nose does not sink in. I have seen two such cases, and in one the whole vomer was cast off, and had to be divided with a snare in order to remove it without injury to the nostrils.

9. *Tumors of the Septum.*—While rather a rare condition, over a hundred tumors of the septum have so far been reported in rhinological literature. Among these polyps, tubercular tumors, and sarcomata are, in the order given, the most frequent.

10. *Anomalies.*—Among the various forms of lack of development, we find reported cases of double septum, in which the septal processes have failed to unite, of entire absence of the septum, or of non-cartilaginous or fibrous septum. On the other hand, as an example of hyper-development, we have an overgrowth of the septum forward, elevating the external nose and giving rise to the prominent hump or hawknose, or of prolongation of the septum backward to the base of the skull; in the latter case the rhinopharynx being divided into two cavities.

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 196.)

THE GREEK WRITERS OF THE EASTERN EMPIRE.

And now begins that long and dreadful epoch in the history of mankind when civilization was almost overwhelmed in the slowly crumbling ruins of the Roman Empire. Julius and Augustus Cæsar, in extinguishing the anarchy of the last days of the Republic, extinguished with it much of that burning fire, the love of human liberty, which has always blazed high in lighting the progress of civilization. Tiberius, Caligula, Claudius, Nero, Domitian, spilled the best blood of patrician Rome and demonstrated the horrible evils of a despotism under weak and wicked men. Nerva, Trajan, Hadrian, the Antonines demonstrated the enormous but temporary advantages to mankind of a despotism under virtuous and capable rulers, but by the time they had passed away, the virtue, the sense of responsibility, the power of initiative, had long since perished. Anarchy and ruin began to spread over the world, and the powers of darkness, oriental sorcery, the incantations of ignorant priests, the vulgar fanaticism of a nascent religion with all its superstitious dross, unrefined and unrestrained, held high carnival in the temples of science and the advance in the art of medicine ceased, and for many hundreds of years the best we can say of medical writers, such as Oribasius, Ætius and Paulus Ægineta is that they copied with tolerable accuracy from the writings of others, intruded few of their own ideas and the admission to their pages of incantations, the descriptions of amulets and cabalistic figures, the recommendations of Chaldean drugs are no more than the perusal of the history of their times should lead us to expect. Attempts were made to check this tendency towards magical therapy. Thus Serenus Sammonicus,* Sorcery. the elder, was put to death by the orders of the savage Caracalla (211 A. D.) because he recommended amulets as remedies for intermittent fever (Sprenkel). He or his son wrote a medical poem (Edit. Ackermann) in which, among numberless other remedies, he

* Serenus Sammonicus was a firm believer in the magical efficacy of the triangular arrangement of the word *Abacadabra* written on a piece of paper folded into the form of a cross, tied up in a piece of linen cloth and placed over the pit of the stomach, to be worn nine days, and then before sunrise cast over the shoulder into running water.

advised the application externally by friction of bull's grease or bear's grease to the neck in cases of sore throat, besides the popular prescription of vinegar as a gargle. Such remedies are still popular ones on every country hill side.

Constanti-
nople.

Constantine founded his great city at Byzantium and moved thither the capitol of the world* (330 A. D.). Julian the Apostate, his grandson, in his attempt to revive the old pagan religion engaged also in the more laudable endeavor to resuscitate the learning of the ancients. Oribasius accompanied him in his campaigns in Gaul before his accession (361 A. D.) to the throne of Constantine, and to him was delegated the task of collecting and epitomizing the works of former masters in the art of medicine. The works of Galen are the chief sources from which he made his compilation, but unfortunately, unlike Cælius Aurelianus and Paulus Ægineta and indeed Galen himself, Oribasius only reveals to us knowledge of the diseases of the upper air passages which is accessible to us at its source. There is scarcely a passage of any importance concerning the nose and throat which we have not already noted in the works from which this author drew his information.

It was in vain that Julian in his short reign attempted to revive ancient learning. Succeeding rulers of a grovelling despotism, although themselves occasionally enlightened and virtuous, were unable to bring back the old free spirit which produced the age of Pericles and the era of Augustus. I may again quote the remarks of the sententious Gibbon: "The subjects who had resigned their wills to the absolute commands of a master, were equally incapable of guarding their lives and fortunes against the assaults of the barbarians, or of defending their reason from the terrors of superstition." The Roman world was divided at its line of natural cleavage between the oriental and the occidental races of mankind. The Eastern Empire lived many centuries at Constantinople in the reflection of the light of the old world of Galen and Hippocrates, but it was around the western shores of the Mediterranean, as formerly along the coasts of the Aegean, that civilization was, after many hundred years, again to assume a new life and a new vigor. On the death of Theodosius (395 A. D.), the last great Roman emperor, the mighty fabric fell apart forever, and under Honorius and his equally impotent successors, after the death (408 A. D.) of Stilicho, the

* Christianity began in Gaul in the middle of the second century, in the time of Galen, Lyons having the first church, and so rapid was the spread of the new faith that two hundred years later Constantine the Great found it to his interest to embrace the forms of Christianity as his ostensible faith and to free the church from taxation.

great commander, the Western Empire was deluged by the hordes of Goths and Visigoths, by the Huns and Vandals, and anything like medical learning utterly perished with the other arts from that part of the face of the earth. The barbarians were converted to Christianity, and their monks, in the search for means of saving their souls from eternal torment, found it necessary to study the Holy Scriptures. Their rude chieftains in their search for methods of legal procedure and orderly administration, found it necessary to study the codes of Roman law. These circumstances finally brought about their familiarity with Latin and Greek literature. Virgil, Cicero, Livy, contributed to the amelioration of their manners and the expansion of their intellects, while Galen, Pliny, and Celsus eventually transmitted to them the seeds of medical science, which had matured in the old civilization, and had been almost lost in its annihilation. Cassius Felix was a medical writer who is supposed to have lived in the fifth century. His book,* as he confessed, was mostly made up of extracts from the earlier Greek writers. He thus speaks of what is apparently diphtheria.

“Ulceration of the fauces, if accompanied by acute fever in sickness, is found to be very bad and fatal, especially if it has begun with severity. There is moreover another inflammation besides the acute fever, which forms in the deep recesses of the mouth white or black, or rather dusky gray patches, which they call tephros (ash colored). It is usually called by the Greeks, Aphtha, which we call ‘coction’ of the mouth. And it is worse, even deadly, in young nursing infants on account of the tender age.”

Diphtheria. 1

There is no mistaking this blending of aphthous sore mouth with true diphtheria.

The Eastern Empire preserved the vestiges of Greek learning, all but suffocated by the sorcery and witchcraft which apparently have always found such a fertile soil beyond the Hellespont. Nemesius, a bishop of Emesa in Syria, lived during the reign of Theodosius (376-395 A. D.) and wrote a book on the “Nature of Man,” in which the old critics, envious of the fame of Harvey, used to pretend to find the discovery of the circulation of the blood. In this book there is a chapter on the respiration, and in it we find the author describing the larynx under the name of the bronchus, and following Galen in saying it is made up of three cartilages. It is Marcellus, very aptly called “Empiricus,” however, who best illustrates the condition of medical learning at this time. He was a Gaul, born at

The Eastern Empire.

* Cassii Felicis De Medicina (Edit. Val. Rose).

Bordeaux, and though a high officer of Theodosius and his son Arcadius, exhibits, as Sprengel remarks, the soul of a slave in his works, recommending certain remedies because they were used by the Diva Augusta or the Diva Livia. His work "De Medicamentis" is said to have been much mutilated by later editors. Chapter X deals with the diseases of the nose, coryza, polypus, ozena, nose bleed, or rather with their treatment; for few writers after Galen devote much space to anything but the transcription of multitudinous formulæ. "We will not pretend to mention the innumerable drugs, but we note that he recommends the prescription of Pliny that a man whose nose stinks should kiss the nostrils of a he-mule, and if the patient is a woman she should kiss the nostrils of a she-mule. Besides drugs which are orthodox now, all kinds of stercoraceous applications are recommended. When the nose is bleeding it is helpful to say three times in the ear of that side some unintelligible jargon. However much we may have to criticise in Marcellus, there is one axiom which he lays down which is not always found in preceding authors and is often disregarded by his successors. In his chapter on affections of the throat, he says: "For a swelling of the fauces and of the palate everything used in the prescription should have no irritating quality," but the very efficacious prescription which follows contains the juice of sour grapes—Sprengel surmises, because the Latin word uva means both grape and uvulitis; but we have seen that the juice of unripe fruits was a favorite prescription for this affection among both the Hindus and the early Greeks. This, however, is his incantation for pain in the throat, which he who suffers should sing to himself: "Crissi crasi, cancrasi—put the hand on the throat and repeat it three times." Besides the usual inevitable swallow prescription of the ancients we find also this remarkable modification of it. "This cure will help one suffering with chronic sore throat. You must shut up a live swallow in the cavity of an African shell and this being tied up in the linen cloth of Egypt, you shall hang it around the neck and on the ninth day you will be free of your trouble." And this is another elaboration of the swallow prescription apparently derived from Dioscorides: "But especially against Synanche it is useful if you will take young swallows alive in the nest, and will burn these alive so that a powder is made from them (their ashes) on the day of Jupiter in old moon, but look to it that you find unequal numbers* in the nest and that you burn as many as there

Incantations
and Amulets.

* Terna tibi haec primum triplici diversa colore
Licia circumdo, terque haec altaria circum
Effigiem duco; *numero deus impare gaudet.*

—Virgil Eclogæ VIII, 73-75.

"For there's luck in odd numbers, says Rory O'More."—Sam'l Lover.

are, and you will give this powder mixed up with warm water as a drink, and with the finger covered with the powder you will touch the place of the synanche from the inside. You will greatly admire this prescription." And then come some more incantations, long and involved. As an amulet some Greek jargon was to be written on a paper which was to be wrapped in linen and hung around the neck for a sore throat. Another mysterious formula was to be used in the same way for a bone in the throat. While I have not exhausted Marcellus' savory pharmacopœia in any of its branches it is understood, of course, that these selections are made from many others of a more rational nature which have not even the virtue of originality nor the interest which always attends the mysterious in therapeutics. Indeed, to do him justice, he only speaks of the incantations, as a rule, after mentioning many of the routine prescriptions which are found in the writings of an earlier and a happier age.

As we have seen there was an interval of two hundred years (660-460 B. C.) between the introduction of written records into Greece and the birth of Hippocrates. This doubtless included that period when the record was engraved on the column of the temple of Æsculapius at Epidaurus of a sacred dog curing a cervical tumor by licking it. From the birth of Hippocrates to that of Galen, six hundred glorious years of medical progress intervened. We have seen the high state of anatomical knowledge revealed in the works of Galen. From the death of Galen to the time of Marcellus approximately another two hundred years had elapsed. The holy dog of Epidaurus finds a mate in the live swallow of Marcellus. "Facilis descensus Averno." As illustrative of the times and as containing a matter of some interest to our subject, I again quote from a page of Gibbon (III, Cap. XXXVII). A war had been raging in Africa between the Arians who denied, and the Catholics who upheld, the Trinity. It resulted in the discomfiture of the latter (530 A. D.)*.

"A military count was dispatched from Carthage to Tipasa; he collected the Catholics in the Forum, and, in the presence of the whole province, deprived the guilty of their right hands and their tongues. But the holy confessors continued to speak without

* The motto of the Church later, "Ecclesia abhorret a sanguine," was hardly applicable to this period. Macchiavelli referring to these African religious troubles in his *Istorie Fiorentine*, says: "Vivendo adunque gli uomini intra tante persecuzioni portavano descritto negli occhi lo spavento dell' anime loro."

The men living then amidst such persecutions carried written in their eyes the terror of their souls.

tongues; and this miracle is attested by Victor, an African bishop, who published a history of the persecution two years after the event. 'If any one,' says Victor, 'should doubt of the truth, let him repair to Constantinople, and listen to the clear and perfect language of Restitutus, the sub-deacon, one of these glorious sufferers, who is now lodged in the palace of the Emperor Zeno, and is respected by the devout Empress.' At Constantinople we are astonished to find a cool, a learned, an unexceptionable witness, without interest, and without passion. Æneas of Gaza, a Platonic philosopher, has accurately described his own observations on these African sufferers; 'I saw them myself; I heard them speak; I diligently inquired by what means such an articulate voice could be formed without any organ of speech; I used my eyes to examine the report of my ears; I opened their mouth, and saw that the whole tongue had been completely torn away by the roots; an operation which physicians usually suppose to be mortal.'" The operations now done for the extirpation of the tongue have proven that the tongue is not the indispensable organ of speech, but what would Galen or Æneas say if they should now be shown that the larynx is not the indispensable "instrument of the voice?"

Ætius.

Ætius is said to have lived as a medical officer of the court at Constantinople about the middle of the sixth century. He was an Asiatic of Amida in Mesopotamia. After Oribasius, he was perhaps the best of those who transcribed the works of Galen and the older writers. There is a great deal in his works (*The Tetra-biblion*) concerning the nose and the throat, but very little we have not met with elsewhere. Uvulotomy and tonsillotomy and the incision of a quincy are the surgical operations described. He warns against the dangers of secondary hemorrhage in tonsillotomy and directs that only that part of the gland which projects shall be cut off. If even a small portion of the normal underlying tissue is removed there is danger of hemorrhage. He was familiar with diphtheria and with adhesions in the larynx resulting therefrom, or possibly he refers only to the acute stenosis. Alum, nutgalls, mercury, besides bryonia, and many other vegetable and mineral astringents and emollient drugs are recommended by him. He fully equalled Marcellus in stercoraceous pharmacology. Incantations are less numerous perhaps, but not by any means absent from his writings. He recommends the use of forceps in extracting bones and foreign bodies from the tonsils. When they were in the gullet, the patient swallowed a sponge with a string attached to it, by which it was then hauled up. For this trouble he

also advises the repeated swallowing of bread boluses. It is said the following is the first mention of the Savior in medical writings:* "Moreover for the removal of those things which are stuck in the tonsils, immediately take a seat in front of the patient and command him to harken to thee, and thou shalt say: 'Come out, bone' (if indeed it is a bone or a straw, or whatever it may be), 'in the same way as Jesus Christ raised Lazarus from the grave, and in the same manner as Jonah came from the whale.' Then seizing the patient by the throat, exclaim: 'Blasius, the martyr and servant of Christ, says come up or go down.'"

This must have been excellent treatment for globus hystericus among the faithful.

Shortly after Aetius, lived Alexander to whom the surname of Trallianus is given, he being one of the five talented sons of a citizen of Tralles. He was the brother of Metrodorus, the grammarian, and of that Anthemius who was the architect of the great church, now the mosque of St. Sophia in Constantinople, which was built (532 A. D.) by Justinian and his consort, the fair Theodora, the licentious Cyprian prostitute who disgraced even the stage of Constantinople before she sullied the much-stained purple of the Cæsars.† Although there are many instances of thaumaturgy in his works, Alexander Trallianus practiced at Rome with honor and profit, and was perhaps the most enlightened physician and the least tainted with superstition of any who had succeeded Galen, but while he has written chapters on the diseases of the nose and throat, there is nothing in them to especially arrest our attention. Of a very different character was Sextus Placitus Papiensis, who outstripped even Marcellus and Aetius in the use of the viscera of animals and equalled them in other departments of Chaldean pharmacology. (Vid. Edit. Ackermann.)

Olfactory
Nerves.

Theophilus, a colonel of the guard under Heraclius (610 A. D.) seems to have been one of the very few medical writers who, in copying‡ from the works of Galen and others, troubled themselves with transcribing any of the anatomy or physiology or semeiology, of which they were in such need. Even he is very inexact. The teleology so prominent in the work of Theophilus is by no means absent from that of his great predecessor, Galen, but the former wishes to explain every function in a manner tending to the glory

* Tetrab. II Sermo IV, Cap. L.

† Gibbon: "The Decline and Fall of the Roman Empire," Vol. IV, Cap. XL.

‡ "De Homin. Fabric.," Lib. III, Paris, 1555.

of God, and he remarks upon the use of the epiglottis in protecting the larynx, that if a crumb fall in it, owing to the lack of proper action on the part of the epiglottis, the patient is suffocated, which is a gross exaggeration of even Galen's remarks in the same vein. His ideas of the purposes of the Almighty in perforating the dura mater and the cribiform plate of the ethmoid would hardly be orthodox to-day, illustrating how dangerous are dogmatic statements outside of the domain of theology. The only advance over the ideas of Galen which I am able to note in Theophilus is the point to which several historians have drawn attention. He accepted the Galenic and Hippocratic idea of air inspired and excretions drained through the perforations in the cribiform plate. He also supposed that through the perforations go the odorous particles. It is perfectly evident that he recognized* "the first pair of nerves as starting from the anterior ventricles of the brain and going to the foramen of the nose on each side, on account of which the brain perceives odors," but as the presence of the nerve fibres in the perforations would be inconsistent with the idea of their patency, we must conclude that Theophilus knew nothing of the distribution of the olfactory twigs. As his was a text-book in the schools of the præ-Renaissance period, this interpretation would certainly have been recognized if justified by the text.

Neither the Pandects or legal reforms of Justinian, nor the virtuous reigns of Tiberius II and Maurice (578-610 A. D.), were of avail in arresting the degradation of the Empire of the East. Justinian abolished the philosophical school of Athens and the consulship of the old Roman regime, but they were long since become mere shadows which were brushed away without harm and without profit to the world. What barbarians had spared the suicidal fanaticism of the despicable Christian citizens of Constantinople, or their equally cowardly and incompetent rulers, destroyed. Even under the great Constantine, every manuscript that could be seized was forthwith destroyed if it contained anything of pagan learning.

Under Heraclius, whose victories shattered the resources not only of the hostile Persian Empire, but the already faltering forces

* See the 1555 Paris edition. The Greek text is so antiquated that I am compelled to judge from the Latin translation of the passage which occurs at page 67.

Theophilus was one of the medical writers whom it was necessary to study and to teach at the University of Paris when it took its rise in the thirteenth century. (Sprengel.) It may be surmised that this choice was due rather to the theology than the physiology of his works.

of his own (610-641), we note the last of the Greek physicians whose works it is worth while for us to review in our search for knowledge of the diseases of the nose and throat. We are indebted to Paulus Aegineta for much which he has borrowed from sources inaccessible to us in the original. It is frequently impossible for us to know how much was original with him.* At least, with the exception of Alexander Trallianus, he is almost the only one after Galen whose works prove their author capable of any originality of his own. Living in the seventh century, he was probably contemporaneous with Theophilus.

Paulus
Aegineta.

We still find aphtha† in infants confused with the graver disorder of diphtheria. He says that the black variety of the ulcers is the most fatal.

As in many of the older writers there is in Aegineta a chapter (l. c. Sec. 19) on the exercise of the voice, not only for strengthening it but as a general exercise of the body. After mentioning the operations for nasal polypi‡ which we have noted in Celsus and Galen, he remarks: "After the operation, having sponged the parts carefully, we inject oxycrate of wine into the nose, and, if the fluid descend by the roof of the mouth to the pharynx, the operation will have been rightly done; but if it does not descend, it is clear that about the ethmoid bones, or the upper part of the nose, there are fleshy bodies which have not been reached with the polypus instruments." Then follows the description of a barbarous method which, it seems to me, Paulus must have derived from a faulty reading or a misunderstanding of the sponge method of Hippocrates. Certainly nothing of the kind can be found in the Hippocratic treatises, as Adams in his comments intimates, but we shall subsequently find the Arabians sedulously following this plan. They apparently derived much of their knowledge from Paulus. "Taking, then, a thread moderately thick, like a cord, and having tied knots upon it at the distance of two or three fingers breadths, we introduce it into the opening of a double-headed specillum (probe), and we push the other extremity of the

The Knotted
String for
Nasal Polypi.

* Dr. Francis Adams' Sydenham edition of the translated works of Paulus Aegineta, which I follow, contains the translator's comments on the different subjects treated, and these consist mainly of citations from all the ancient writers on medicine, including the Arabians. No better work can be consulted for a review of ancient medical knowledge, although rarely there seem to be grave errors, and the citations do not usually guide one to the quoted sources in the texts of the originals. Unfortunately the text of Paulus does not accompany the translation.

† Book I, Sec. 10.

‡ Book VI, Sec. 25.

specillum upwards to the ethmoid openings, passing it by the palate and mouth, and then drawing it by both hands, we saw away, as it were, with the knots the fleshy bodies. After the operation, we keep the opening separate by means of a tent resembling the wick of a lamp."

As for tonsils* he pulled them forward with a hook "and then we cut them out by the root with the scalpel suited to that hand, called *ancylotomus*, for there are two such instruments having opposite curvatures." He used a tongue depressor in this operation as well as in that of uvulotomy (l. c. sec. 31) but he adopts Galen's caution not to cut off too much for fear of injuring the voice and making the patient liable to inflammation of the lungs. If the patient refuses a cutting operation the rudundant portion may be removed by caustics applied by a special instrument, called "*stapylocaustos*."

In his comments upon the operation of Antyllus for tracheotomy which I have quoted, Paulus makes it plain that he himself was familiar with the operation, for he says (l. c. sec. 33): "We judge the windpipe has been opened from the air rushing through it with a whizzing noise and from the voice having been lost." In closing the wound he freshened the edges of the transverse incision and sewed the skin, but not the cartilage, the latter not being divided.

He follows Hippocrates in his treatment of fractures of the nose, (l. c. sec. 91). We miss all invocations, incantations and amulets from the throat pharmacopia of Ægineta, and he does not lay much emphasis on the Chaldean prescriptions, though they are mentioned with approval (III—27), stercoraceous drugs and the swallow prescription being advised.

THE ARABIANS.

In pursuance of the plan of this book we must now devote an unusual amount of space to the rapid enumeration of the political events which shifted the leadership in science and medicine from the Greeks to the Arabians, events which are connecting links in the progress of civilization.

Greek physicians existed at Constantinople as long as the Christian religion flourished there, but while their works are of interest to the student of the phenomena presented by a dying civilization, they are of less interest to the historian of the progress of medical knowledge. Guizot,† speaking of Roman Gaul in the last days of

* Book VI, Sec. 30.

† "Hist. de la Civilization en France."

the Empire, asserted that "The Library at Constantinople had a librarian and seven scribes constantly occupied, four for Greek and three for Latin; they copied the new works which appeared or the ancient ones which were degenerating. It is probable that the same institution existed at Trèves, and in the larger cities of Gaul." Notwithstanding periods of vigor exhibited by the Eastern Empire, notwithstanding, as Freeman declares, many of the Emperors were great conquerors and rulers who beat back their enemies on every side, and made conquests in their turn, although the last Constantine died a death worthy of the first, hopelessly battling for his empire in the breach of the city wall, notwithstanding all these things, learning did not send forth any new shoots, and Gibbon sums the matter up thus: "They read, they praised, they compiled, but their languid souls seemed alike incapable of thought and action." Finally, their political existence sank to the level of their civilization. The walls of Constantinople protected its feeble inhabitants, except for its conquest by the crusaders, for more than a thousand years after its impregnable situation had been selected and its defences constructed by the foresight and energy of the great Constantine. At last it fell (1453) before the conquering Turk, as falls every work of man, however wisely built or however stupendous, unless its bulwarks are the continued energy, virtue and intelligence of the people who enjoy its protection.

We have seen how, five hundred years before the Christian era, the great kings of Persia drew their physicians from the Greek schools of medicine. The Alexandrian dynasties had long since passed away, and it is significant to note to how low a level Greek medicine had sunk among the bastard descendants of that noble race to find another line of Persian kings sending Arabian physicians to Constantinople to minister to the many bodily ills of some of the Greek emperors; but it was first through Greek physicians, through the exiles whom the fanaticism of the theologians of Constantinople had driven into Persia, that the Arabs received the first inoculation of the virus of learning. It was through the exiles driven by anarchy and the forebodings of impending ruin, as well as by its culmination that Italy first received the direct impetus from Greek sources which resulted in the Renaissance. From the Nestorians the Arabians not only absorbed profane knowledge, but from them the youth Mohammed on his caravan trips drew the inspiration of his religion. Not only the Nestorians, but still more perhaps the Jews, who taught their religion to both Christ and Mohammed, aided in this transfer of learning to the Arabians.

The Arabian
Conquest.

Four years after the death of Justinian, Mahomet, the only son of Abdalla, was born at Mecca in 569 A. D. Heraclius, after his great victories over the Persians, was weighed down by age and disease, and his empire was exhausted by years of destructive warfare. Therefore the feeble races under the sway both of the Persian and of the Holy Roman Empire of the East were easy conquests for the sturdy Arab. The forces of nature are eternal, their laws immutable, and the results of their activity when surveyed over long periods of time and sufficient expanse of space, appear analogous even to the finite understanding of man. The expansion of the Mohametan Crescent rapidly grew until in a period of less than a century from the death of Mahomet in 632 A. D. one horn rested in the fertile valleys of Spain (710 A. D.) and the other menaced the walls of Constantinople itself. The fanaticism which is easily engendered in the populations of Asia has made it the cradle of religions. The poverty and hardships of the human beings who struggled among the burning sands of Arabia weeded out the weaklings of the race and trained the endurance of the survivors to resist the effects of thirst, hunger and fatigue, and when fired by the visions of Mahomet with the prospects of glory and power and with the hope of the indulgence of libidinous passions both in this world and the next, they swept away the feeble civil power, and with it the babbling theological dissensions of the Christians of Africa and Asia Minor, crossed the Mediterranean and overwhelmed the Goths who had had time to be enervated by the luxury of the fertile plains of Andalusia and Granada.

But from the northeastern confines of the temperate zone in Asia, the Turks, having previously accepted the religion and despised the civilization of the followers of the Prophet, checked the advance of his race. From the northwestern provinces of Europe the Germans and Franks, unsullied by a religion which inculcates the righteousness of polygamy and human slavery, checked the advance of the Saracens at the mountainous line which separates the Spanish peninsula from the rest of Europe. Charles Martel with his stout heart and iron mace annihilated their army before Tours in 732, and eventually they were driven back beyond the Pyrenees to develop a wonderful civilization and to suffer from its luxury and the enervation of the climate, which after nearly eight hundred years made them a prey to the powers of Ferdinand and Isabella (1493) grown to an effective force amidst the more arid and mountainous regions of Aragon and Castile.*

* The Arabs conquered Persia in the seventh, Spain in the eighth and the Punjab in the ninth Century, and finally all India.

We have cause to be grateful not only that the victories of Mahomet produced empires which protected science and letters at Bagdad, Alexandria and Saragossa, but because they shattered the belief of large numbers of European mankind in the vain and presumptuous claims of the Christian ecclesiastics to a monopoly of the favor of heaven, and so perhaps did something to start the idea that the abodes of bliss are not exclusively a private park for the priests and their friends. At any rate they must have suggested the idea that images and relics were as little efficacious in ensuring victory as the gods of the pagans over whose destruction the early Christians gloated.

The destruction of the Alexandrian Libraries.

Julius Cæsar had first, by the incident of war, caused the burning of the Alexandrian library in the Museum. This was later replenished by Anthony in his devotion to Cleopatra, at the expense of the library at Pergamos. Four hundred years later Theophilus, the Bishop of Alexandria, destroyed also the library in the Serapion. His nephew, the saintly Cyril, followed him in the bishopric and added further laurels to the family fame by killing the fair Hypatia with a club. She was a learned pagan lady, addicted apparently to lecturing on theosophy. Finally the remnants of the books in Alexandria, which had survived the vicissitudes of a thousand years, were burned by the Arabians, when they were fresh from the barbarism of the desert, Omar sending word that what was not contained in the Koran was false and what was also to be found in the Koran was on that account superfluous. The great temple of the Serapion, the annex to the Museum, where science had flourished for centuries, with its splendid gardens of birds and beasts and its laboratories supplied with its instruments of precision, were destroyed by the fury, the folly and the fanaticism of man. It has been denied that the Arabians found anything to destroy. However that may be, these fiery fanatics, intent on entering the gates of Heaven, filled with objects of sensual delight, suddenly developed such a love for material science as the world had never seen before and perhaps has not been familiar with since. As Draper says, the Byzantines obliterated science in theology and the Saracens illuminated it in medicine. Vast libraries again were collected at Bagdad and elsewhere in Asia, Africa and Spain. The works of Ancient Greece were translated into Syriac by the Jews and the Nestorians, both of whom, the former for denying and the latter for modifying the Catholic acceptance of Christ, had been persecuted and expelled from the Byzantine and Roman dioceses. A good deal of Chaldean medicine was introduced by them to the Arabs who were at first apt

The Arabian Renaissance.

scholars in these matters. We have seen how its amulets and incantations and its filthy drugs abounded in the later Greek writers. With these things, however, astrology and the germs of alchemy were brought from the plains of Asia, and out of these, aided by the traditions, if not the records, of the school of Alexandria, the Arabs developed the great sciences of Astronomy and Chemistry. While they soon rejected with contempt the belief in incantations and amulets, they persisted in the use of stercoraceous drugs. Unfortunately for medicine they neglected the study of anatomy through the dissection of the human body. In this fact we recognize the influence of their religious scruples in preventing any material advance of rational medicine over the teachings of Galen and Hippocrates; for without this underlying study, medical science comes to a standstill and will ultimately perish entirely, however enlightened its votaries may be in other directions. Indeed, whatever may have been their contributions to other sciences, I confess, after reading something of Arabian medicine, to have been neither edified nor impressed. It would seem that in six hundred years they might have done more when we consider the six hundred years which elapsed between Hippocrates and Galen. We look in vain for any material advance in the knowledge of the nose and throat and their diseases made by the Arabs. It is to them, however, we owe the introduction into our pharmacopœia of the syrups and elixirs, so useful in affections of the throat as vehicles for drugs administered in them, which often derive from the vehicle a reputation quite ephemeral.

The Inferior
Maxilla.

It will be remembered that Galen supposed the inferior maxillary bone was not a single bone, but composed of two halves. This error, according to Sprengel, was pointed out by Abdollatif, who made the discovery by examining with care one of the many heaps of human bones which were so plentiful in the days when religion was propagated with sword and fire; and this was almost the extent of their contribution to the anatomy of the head and neck. They were familiar with uvulotomy and tonsillotomy and the removal of nasal polypi by the barbarous string method of Paulus Aegineta, Mesua using horse hairs twisted into a knotted string for the purpose. Rhazes, also an early Arabian writer (died 923 A. D.), was familiar with these methods. Tracheotomy was known to them only from Aegineta's description of Antyllus' operation. Even Albucasis, a late (died 1122) and perhaps the boldest, certainly the most brutal, of the Arabian operators, knew of no one in his time who had performed it. He had seen a nurse girl who had cut her

Tracheotomy.

windpipe and who had completely recovered when he sewed up the wound. Avicenna (980-1036), the Prince of Physicians and the greatest of the Arabian authors, simply describes the operation according to Paulus, while Avenzoar (died 1161) went so far as to try it on a goat. Avicenna, and many others of the Arabian writers, showed they were practical observers in likening some of the nasal polypi to hemorrhoids and advising the ligature for them. In this they were followed by many of the writers of the Italian Renaissance and even of much later times. Avicenna, whose work was a text-book of almost exclusive authority during the later Middle Ages, describes the anatomy of the nose and throat in a very poor transcription of Galen. He gives, however, a very good description of the disturbances of olfaction, recognizing the two varieties, viz., obstructive anosmia due to nasal stenosis and the essential form due to some central brain lesion.*

The use of the cautery, carried to such great extremes by Albucasis, was a favorite remedy for all sorts of affections. Baas relates† how Mahomet, instead of resorting to a more spiritual and miraculous method, advised a friend suffering from angina that he should have an application made of the actual cautery. Johannus Mesua Damascenus advised‡ the use of forceps for the removal of polypi and afterwards the cauterization of their roots, or else the use of hot forceps, but if this method was impossible he used the horse-hair string. In this author we may find this remarkable recommendation for the cure of inflammation of the palate (l. c. Lib. II, Sect. II—Summa 1, Cap. 2). "The second method of cure is the diversion of the cause, and this is performed in a manner which causes the trouble to shift its seat, in short rubbing of the ears and pulling them forcibly upwards, and the painful stretching of them, and the application of cups to the opposite part. For these things raise the inflammation and bear it upward; and among those things which are useful in the elevation of it is that a handful of hair should be grasped in the hands and the patient told to keep silent. Then put thy feet on his shoulders and drag strongly on the handful of hair, until the skin is pulled up, for by such dislocation will the pharyngitis also be raised." These patients probably complained as do our own that their "palates were down."

The Cautery.

* Edit: Venice, 1562, p. 581 et seq., Lib. III, Cap. 4.

† "History of Medicine," Am. Ed., P. 219.

‡ Opera, Venice, 1589, Lib., II De Aegritud. Narium, Cap. 6.

Some confusion exists among the Arabians as to whether the dung of a white dog or the white dung of a dog, to be obtained by feeding him on bones, was the proper medicament in angina. The swallow prescription is always mentioned in some form.

In removing foreign bodies from the throat Janus Damascenus recommends, apparently as a variation of the sponge method we have noted in Ætius, the tying of a piece of half cooked meat on a string and bringing it up after it is swallowed. Nearly all even of this sort of surgery may be found among the late Greek writers of the Eastern Empire. Guy de Cauliac* refers to Haly Abbas using "un instrument appellé mirror au soleil" or in the Latin edition "speculum ad solem," for opening the nostrils in examining a nasal growth. On referring to the Latin translation of Haly Abbas by Michael de Capella in 1523,† it may be seen that the passages to which Guy apparently refers hardly warrant this rendering. In the work of Constantine, the African, "De Communibus Medico Cognitu," which is said to be an abridgement of Haly Abbas, nothing of the kind is to be found. We may conjecture that Cauliac read the text wrongly or that he had access to others which are not now accessible to us; but at any rate it is evident that Cauliac had some knowledge of such an instrument. Indeed the use of the cautery in the nose from the time of Hippocrates to the present presupposes the use of a tubular speculum at least.‡

From the fact that the processes are occasionally multiple with a common base of attachment and the Greek conception of them was embodied in the name polypus or many feet, we find the mediæval translations from the Arabic converting the name into the word "Scorpio." How accurately this expresses the Arabic word for polypus, I do not know.

Albucasis who used the cautery savagely for almost everything and apparently often at random, recommends burning the skin beneath the eyebrows for a bad odor from the nostrils.§ We may conjecture that this is related to the Libyan custom as related by Herodotus (l. c.) Some of the remarks of Albucasis in regard to operations on the nose and throat may be inserted here as interesting and illustrating somewhat the figures of the instruments taken from Channing's Latin version of his surgery. The exist-

* Edit.: "Nicaise," P. 328.

† f. 279, col. C., Pract., Liber IX, Cap. 32.

‡ According to Cloquet the speculum of Guy de Cauliac, or Haly Abbas, is figured in "L'Interpretations des Dictions Chirurgicales" which Laurent Joubert printed at the end of his edition of the "Grande Chirurgie de Guy de Chauiliac," printed at Rouen in 1615.

§ Channing's Latin translation, Vol. II, P. 35, Sect. 14.

ence of these figures in the original manuscript was one of the forerunners of the introduction of woodcuts,* which antedated the invention of Guttenberg. It must be confessed that Channing's Latin text of Albucasis does not clearly correspond with the figures which accompany it.

"And when glands occur in the throat similar to the glands Tonsillotomy. which occur externally, they are called the two tonsils. When thou hast treated them with those things which I have mentioned and they are not cured, look and if the tumor is hard and of a dark color, of slight sensibility, do not touch them with the knife. And if it is of a red color and the base is broad do not touch it with a knife for fear of hemorrhage, but delay until it has ripened, for then thou canst perforate it or it will break of itself. But if it is of white color, round and has a slender base, this is the kind which is suitable and thou shouldst cut it. Thou shouldst examine before operation if the swelling has entirely disappeared or in what manner it has diminished. Then thou seatest the patient in the clear sunlight and takest his head in thy lap and openeth his mouth and taketh the instrument in thy hands which will depress his tongue, a concave instrument somewhat of this form (Fig. 1); thou canst

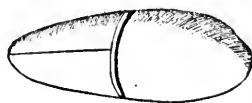


Fig. 1.

make it of silver or of brass; it should be thin like a knife; with this the tongue is depressed and the swelling will then be apparent to thee, and let thy vision fall upon it. Then thou shalt take a hook and fix it in one tonsil, and with it thou shalt draw it out as far as possible; but of course thou shalt not draw out with it any

* The earliest woodcut remaining to us dates from 1423, but there is ample evidence of the existence of the art long before this, in Venice and elsewhere.

of the membranes. Then thou shalt incise it with an instrument of this form (Fig. 2.) It is similar to a forceps except that the ends



Fig. 2.

are curved and the edge of each is opposite the other and is very sharp. It is made from Indian or fine Damascus iron. But if this instrument is not at hand thou mayst cut it with a knife with this shape (Fig. 3)—sharp on one side, less so on the other. And some-



Fig. 3.

times other tumors than tonsils grow in the mouth. Thou wilt cut these out as thou doth the tonsils." (Liber II, sec. 36.)

**A Post-Nasal
Tumor.**

In short they were to be cut out with scissors or a sickle-shaped knife. Then follows the very interesting report of a post-nasal growth. "Once I treated the tumor of a woman which had grown in her throat. It was of a dusky color and not very sensitive. The woman was almost strangled, and from the constriction of the passage breathed with difficulty, and she was prevented from drinking or eating anything, so that she was reduced almost to the point of death, and she had been in this condition a day or two. The tumor so projected forward that two branches of it protruded from the nostrils. Therefore with the greatest promptitude I hastened to fix in one of these a hook and dragged on it, and that whole portion was pulled forward. Then I cut it off where I had pulled it out at the nostrils. Then I did the same for that which projected on the

other side. Then I opened her mouth and depressed her tongue. Then I fixed a hook in the tumor itself and cut off a part of it and only a little blood came from it, and the throat of this woman was free and she immediately drank water. Then I offered her some food. I did not cease to cut pieces from this tumor for a long time, but the new growth filled the place of the excised pieces until her patience and my own was exhausted. Wisely then did I act, and I cauterized the tumor up in the back of her throat and thereupon it did not recur. Then the woman left me and I know not what God did with her after me." These quotations, as literal as possible, from Channing's deplorable Latin, will indicate the manner of man this modest Arab was, and better than words of mine will portray the state of laryngological practice among the Arabs. It may be profitably compared with the procedures of Hippocrates in cases of nasal polypi, in order to realize the backward steps taken in 1500 years. Albucasis describes about the same methods of treatment for uvulotomy, following the injunctions of Galen. His directions for removing foreign bodies are much the same as those of the later Greeks. His remarks on laryngotomy I have referred to above. Love of the hot iron and dread of the knife characterized Arabian surgery, and they seemed more afraid of drawing blood than of inflicting atrocious pain. In all this we behold the result of defective anatomical knowlege.

And these were the votaries of science who guarded the portals of medicine for six hundred years. In other departments doubtless their achievements were great, but despite the great debt modern civilization owes to them, medical knowledge languished and we have only to be thankful that it did not entirely expire, that it was not wholly given up to amulets and charms and stercoraceous drugs, that mysticism and the occult, which we still have with us in the Faith Cure and the Mind Cure and all that foul brood of Darkness, did not in this period of weakness, when anatomy had perished entirely, overwhelm the Art of Medicine as it did in India. The spectre Orientalism still haunts us. It is a vague disembodied spirit, but it is the ever present foe of civilization.

For several centuries it was through the Arabs only, or perhaps it is better to say, chiefly, that Europe knew anything of the medicine of Hippocrates and Galen, but when the better editions of the early Greek writers came into the possession of the Italians, it was soon perceived how gross had been their rendering of them.

A CASE OF EPILEPTIFORM CONVULSIONS CAUSED BY SHOE BUTTON IN THE NOSE.

BY J. S. STEELE, M.D., MONTEREY, MEX.
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"Man is wonderfully and woefully made" when a shoe button in a boy's nose will throw him into daily convulsions, often as many as six or eight a day, and if not relieved make an idiot out of what would have otherwise been a very smart boy.

The case I have to report is of a boy, "Master T.," age about six and one half years. Family history good, has several sisters and brothers, one of which is younger than he, and all in excellent health. Master T. was brought to me November 12, 1900, for the purpose of examining and treating his catarrh, with which he had been suffering for about two years. He proved to be a fat, chunky, well-nourished boy physically, with a rather large head, and large ball spot on back of his head, in the center of which there was a sore; this ball place and sore was caused by the boy falling backward when he had a convulsion and continually bumping his head against the floor or ground during a convulsion. These convulsions made their appearance about two years before he was brought to me; at first they were light and not of frequent occurrence, but gradually grew worse and more frequent, until when I saw him they were of almost daily occurrence and often as many as six or eight a day, and very severe. Before these convulsions made their appearance Master T., for his age, was up to the average in intelligence, but shortly afterwards his mind, instead of continuing to improve, began to show signs of weakness, which increased until when I first saw him he had almost forgotten how to talk, or would not talk, nor play with the rest of the children; in fact, his mind seemed almost a blank. When brought to the table he would with both hands grab for anything he could reach; he could not be controlled, and was almost always hungry.

Master T. had been treated by the best native doctors in Mexico, and, no doubt, had taken almost everything in the pharmacopia recommended for epilepsy; and while under the influence of some strong nerve sedative would sometimes go as many as three or four days, but never more than five days, without a convulsion.

On examining his nose, both nostrils presented the appearance of a chronic catarrhal rhinitis, with a little enlargement of the middle

turbinated bodies. In the left side, situated between the middle turbinated body and septum and at about the junction of the middle and anterior third, was apparently a black crust which failing to wash or wipe out, I removed with forceps quite easily, and to my surprise it proved to be a shoe button, which from its appearance must have been in the nose for a long time, for it was rough, the enamel being nearly all worn off. On inquiry found out that the boy had not worn button shoes for about two years, the last pair he was wearing when the convulsions first made their appearance two years before. The boy had never learnt how to blow his nose, yet there was very little fetid accumulation in this nostril, and after three days it was almost impossible to tell that there had ever been a foreign body in the nose. The nose was treated locally for his chronic rhinitis, with antiseptic sprays and applications of protargol, iodine, etc. At this time he was taking large doses of potassium bromide, which doses I ordered decreased until on the sixth day they were discontinued. The daily treatment of the nose was kept up. On November 28th the convulsions returned, but not so severe, yet were of daily occurrence for five days. On the fifth day I thoroughly cauterized the middle turbinated body at point where button had been pressing, with the result of again checking the convulsions until December 24th, when he had a very mild attack, also one on the 25th, which was the last he has had. I feel confident that he is entirely cured. About all the internal treatment he had was a laxative quite frequent and the infusion of valerian symptomatically. Master T.'s mind began to improve shortly after the removal of the button, and, although not entirely well, he is very much better and on a good road to complete recovery. On June 22d I removed the right tonsil, it having become quite enlarged in the last two months. One characteristic of Master T.'s convulsions was that he would always fall backward, and shortly before the button was removed would foam at the mouth and cry out a great deal. I was not fortunate to see the boy in convulsions, but from all the information I could get these convulsions were due to a reflex nervous irritation caused by the button in the nose, and not the obstruction caused by the button, which was much less than would be expected. In almost all the cases I have seen reported of convulsions caused by foreign bodies in the nose they were of a character pointing to the obstruction in the nose as the principal if not the sole cause of the convulsions, and not as in this case to a direct nervous irritation.

The father and mother were even more surprised than I that the boy had any foreign body in the nose.

July 30, 1901.

RECURRENT PARALYSIS WITH COMPLETE APHONIA PASSING INTO ABDUCTOR PARALYSIS, WITH RE-TURNING SINGING VOICE.

BY J. W. GLEITSMANN, M.D., NEW YORK.

Although several cases of paralysis of the recurrent nerve terminating in abductor paralysis are recorded in literature, and undoubtedly a great many more have been observed, but not reported, I considered the case of sufficient importance to publish it for scientific as well as clinical reasons.

It is only a few years ago that an animated controversy took place as to the explanation of the position of the vocal cord in recurrent paralysis, and although the consensus of the majority of writers declared themselves against the new role and action attributed to the cricothyroid muscle in this connection, a renewed and earnest study of this question was the consequence, productive of many valuable essays.

The greater part of this recent work consisted in experimental researches, and the clinical observation contributed very little to the support of this subject. But Semon himself has said that as valuable as the physiological experiment always will be, we should not underrate the importance of the clinical evidence, and his doctrine of the greater vulnerability of the abductor muscle¹ was primarily entirely deduced from and based on careful clinical observation. The explanation attempted for this greater vulnerability were more or less hypotheses, till Risien Russell found that the nerve fibres for adduction and abduction of the vocal cords are running in separate bundles during the whole course of the nerve trunk, and that the fibres for the abductors are at the inner, tracheal, those for the adductors on the outer side of the recurrent (² and ³.) A second, but not less important discovery of a differentiation between the adductor and abductor fibres is of more recent date by Grabower.⁴ He found by a new method of staining a considerable difference in the ultimate endings of the nerve fibres in these antagonistic muscles, and believes that future and more extended investigations will throw additional light upon the causation of prevalent abductor paralysis.

It is not my aim to enumerate the different reasons produced to prove the greater proclivity of the abductor to disease, and I

desire to dwell only upon one argument, which is supported by the case to be related. If it be true, that the adductor muscles have more resistance and that the abductor is easier and earlier affected by injury or central lesions, it has been logically inferred, that the adductor will quicker recuperate than the abductor, when a recurrent paralysis shows any tendency to improvement. Of such cases reported, the case of Semon⁵ is probably the most remarkable one in which a recurrent paralysis with almost complete loss of voice terminated in an abductor paralysis, enabling the patient to resume his vocation as professional singer. On the other hand, Elsberg⁶ relates a case, in which a bilateral recurrent paralysis turned into a bilateral abductor paralysis, necessitating tracheotomy to avoid suffocation. Similar cases of unilateral recurrent and later abductor paralysis are reported by Makins⁷, Williams⁸ and others, all proving the greater recuperative power of the adductor, whilst the abductor remained paralyzed.

The case in question is also not any less interesting from a clinical point of view for two reasons: first, the complete recovery of the voice with ability to sing after a long period of absolute aphonia, and the question of the etiology of the recurrent paralysis, both of which features will receive due consideration in the following history:

Male, forty-five years of age, well built, strong muscular frame, weight 180 pounds, with six feet in stockings; traveling agent, acquired syphilis twenty-five years ago. The initial lesion was comparatively light, and followed by the usual roseola and a swelling of the cervical and inguinal glands. The patient, being very conscientious, received at that time and at all times later on, proper treatment and was always a most willing obedient patient. He remained free from all symptoms till twelve years ago, when he felt pain in the tibia and developed plantar psoriasis, from which he recuperated after one month.

His present lesion dates from December, 1900, when his breathing became difficult, and in January, 1901, actual dyspnea with stridulous respiration set in, whilst his voice remained clear. He was examined at short intervals by five physicians in a foreign country, who all made the diagnosis of "aortitis" and after energetic specific treatment—the maximum dose being 12 grs. iodide potassium a day—the patient felt relieved.

February the 5th, his voice suddenly had disappeared in the morning, whilst the evening before it had been clear and strong, and his aphonia lasted with very little amelioration almost four months, but without a recurrence of the dyspnea. Latter part of

May he was examined with the laryngoscope and a paralysis of the left recurrent nerve was found.

I saw the patient the first time June 5th, and found the following condition of the larynx: No perceptible hyperemia, no infiltration of any part, except a slight bulging of both ventricular bands, the right vocal cord normal as to color and movement, the left standing immovable midway between adduction and abduction, and visible only with difficulty on account of the enlarged ventricular band. At phonation the left cord remained in the same position, but a very slight oscillation of the arytenoid was perceptible. In addition a complete paralysis of the left internal tensor existed which produced a strong curved line of the cord with the convexity outwardly.

Inspection of the neck revealed nothing abnormal, and except the loss of his voice, the patient suffered only from an accumulation of mucus, produced at the slightest irritation and a slight difficulty of respiration when walking briskly or climbing stairs. As repeated examinations of the chest did not give me a satisfactory explanation of the previous severe dyspnea and the development of recurrent paralysis after the former had materially improved, I sent the patient later on to a prominent clinician, who stated to me, that he found a stenosis of the left bronchus, caused either by pressure from a mediastinitis, enlarged glands, or by a syphilitic bronchitis. He believes, that either of these affections would fully explain all the symptoms of the patient.

His laryngeal condition improved very slowly. The local treatment consisted in disinfectant and astringent atomization and daily applications of the faradic current in the region of the recurrent, and several times also endolaryngeally. His voice gradually came back, but it had such a coarse raucous sound, that it impressed me as being produced mostly by the ventricular bands which by the continuous effort to speak had become still thicker. I, therefore, made an energetic cauterization of their free edges with trichloroacetic acid and when the eschar had exfoliated, I had the satisfaction of obtaining also a full view of the left vocal cord.

The first visible improvement was not an improvement in the adduction of the cord, but a gradual and slow disappearance of the internal tensor paralysis. I was very careful to make sure of the correctness of this observation, and about a week after the convexity of the cord had passed away, adduction began to set in, which improved much quicker with the result that latter part of July the patient had regained his full voice, and is now able to

sing a full scale in clear, loud sounds without interruption. I believe if he ever had any training, he would also be able to resume a professional career.

The above laryngeal conditions were also verified by two of my assistants, who treated the patient during a short absence from the city.

The scientific side of the question I have already dwelt upon sufficiently not to enlarge upon any further. The clinical interest centers in the successful restoration of a vital function, a rare event in complete recurrent paralysis of over four months' duration. But the development of the paralysis is to my mind not less interesting, appearing after a severe dyspnea had almost disappeared. Not knowing the condition of his chest at the time, it is difficult to explain this singular occurrence, as it would only be natural to expect the paralysis to appear at the climax of the chest trouble. In my opinion, the most probable explanation is that aside from the aortic and bronchial affection the gummatous process in the mediastinum being in the beginning soft in character, did not exert a pressure on the recurrent, but that it formed in the course of absorption and cicatrization a denser scar tissue, in which the nerve was imbedded and thus deprived of its normal function.

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ANILIN OIL, WITH REPORT OF A CASE SHOWING TOXIC SYMPTOMS FROM ITS USE IN THE EAR.

BY HOMER DUPUY, A.M., M.D.

Assistant Surgeon Eye, Ear, Nose and Throat Hospital, Clinical Assistant to the Chair of Otolaryngology, Rhinology, Laryngology, New Orleans Polyclinic, New Orleans.

In the July, 1901, issue of *THE LARYNGOSCOPE* I contributed a paper on: "The Production of Local Anesthesia in the Ear." In the communication I sounded the praises of a mixture containing: Cocaine, absolute alcohol, anilin oil, for the reason that this solution in fifty recorded cases produced complete anesthesia of the tympanic membrane.

Increased experience, both in hospital and private practice, has but served to emphasize the statement that we are at last in possession of an anesthetic solution which bids fair "to fill a long-felt want in aural surgery."

Dr. Gray, of England, to whose ingenuity we owe this anesthetic mixture, reports that he has not had any trouble with symptoms of intoxication either from the anilin or the cocaine.

On the principle that anilin readily penetrates thickened and inflamed tissues, its use as a vehicle for anodyne "ear-drops" seems plausible.

I therefore tried the combination of cocaine with anilin oil in two or three cases for the relief of ear-ache, placing the solution in the hands of the patient, with instructions to instil into the canal every hour until relieved. No ill effects were noted.

In the following case, however, profound intoxication ensued: Miss E. P. w. f., æt. seventeen, operated July 31, 1901, for acute supp. endomastoiditis, secondary to an otitis media. Three weeks after the operation, at which time all discharge from the middle ear had ceased, and mastoid wound was closing rapidly, a diffused inflammation developed in the right auditory canal.

Exhausting all my therapeutic resources without affording relief, I decided to make free incisions along the walls of the canal. The patient strenuously objected. I then prescribed a local anodyne composed of cocaine, 15 grs., anilin oil, 1 oz., with directions to heat solution, and with a dropper to instil about 15 gtts. in the meatus every hour.

When I saw the patient that night at 8 o'clock she had been given four instillations and appeared greatly relieved. Her mother

called my attention to her drowsy condition, which I attributed to exhaustion and the relief from pain. Subsequent developments, however, proved this to have been the initial stage of a powerful intoxication. Before leaving I ordered the instillations to be used only every three hours.

About 9 o'clock the same night the patient complained of "feeling faint," uttered a loud cry, immediately lost consciousness, and in the words of the attendants "became perfectly blue in the face."

I was telephoned, being absent, Dr. Guthrie, by request, hastened to the call. Here is his own statement:

"When first seen at 11:30 p. m. patient was in a state of extreme prostration. Grave as was her condition, her mother informed me that she had been much worse just after the attack of syncope at 9 p. m.

Lips and nails were of a bluish-black color; face ashy in hue, skin cold and clammy. An intense sweat bathed the entire surface of the body. Pupils were apparently normal; pulse 136 and compressible, respiration 36, sighing in character, temperature by axilla 97.3° F.

My first thought was the probability of poisoning by some of the "coal tar" derived antipyretics. Enquiry elicited the fact that she had taken at intervals of about five hours for two days previous compressed tablets composed of acetanilid, gr. 3¾, codeine, gr. ¼. At first this satisfied me as an explanation; but further consideration convinced me that this alone could not have produced the symptoms. If idiosyncrasy existed it would have manifested itself before.

Further enquiry revealed that one-half dropperful of "ear-drops" had been put into the ear hourly from 4 p. m. to 8 p. m. The mother informed me that the "drops" contained cocaine. However, suspecting anilin oil, knowing it was being used by instillation, I poured a small quantity of the liquid upon water and had my suspicions confirmed.

I washed out the ear and administered atropine gr. 1/100 and strychnine sulph. gr. 1/30 per orem, every two hours. spts. ammonia aromat. m. x. every hour. Hot bottles were placed about patient and brandy given at frequent intervals. At this stage Dr. Dupuy came in and we consulted."

When I saw the patient that night at 12 o'clock I was immediately impressed with the peculiar dark-blue color which tinged her face and hands. The attendants assured me that this color had faded away considerably and that she began to look herself again.

Though conscious she was still very drowsy ; temperature, pulse and respiration had not changed since Dr. Guthrie's first examination. I first thought of cocaine intoxication, but on further analysis of the complex of symptoms presented by the case, and on eliminating all other probable causes, I was forced to the conclusion that anilin oil must be the responsible agent. At 2 a. m., when I left her, she had improved considerably.

The next morning her lips and finger-nails still presented a decided dark-blue tinge, but the rest of the body had regained its normal color. Atropine, strychnine and ammonia were kept up the whole night, yet the pulse was 136, small and thready. This cyanosis of the lips, finger-nails and the rapid pulse persisted for almost twenty-four hours. Though extremely weak for several days she made a final recovery.

* * *

A review of the pharmacology of anilin shows that for some time after its discovery chemists regarded it as non-toxic.

But its extensive application as a coloring agent in the industrial arts has brought to light the fact that it is highly poisonous. Cases are recorded in which its toxic powers were manifested through inhalation and by cutaneous absorption. The peculiar dark blue color of the cyanosis, its persistency around the lips and under the finger-nails, phenomena so marked in my case, *are essentially characteristic of anilin poisoning.*

Dr. A. Gray, in *The Lancet*, March, 1901, remarks that several of his patients, on whom he had used the solution for local anesthesia in the ear, told him that an hour or two after using the solution their friends noticed this peculiar color about the lips. No untoward symptoms were present in these cases. He claims that the cyanotic tinge is due to the transformation of oxyhemoglobin into methemoglobin, and always passes away in a few hours without ill effects.

Dr. StClair Thomson, in *The Lancet*, April, 1901, reports a case of furunculosis of the external meatus, in which he used cocaine with anilin oil as a menstrum.

A small pledget of cotton wool moistened with the solution was used in the canal at bed time. It afforded great relief. Next morning, as pain returned, the drops were used again at 5 a. m. At 7:30 a. m. the typical blue color from anilin poisoning appeared on the face, lips, tongue and hands. No fever or mental disturbance. Pulse small and somewhat rapid. Pupils normal. Examination of the heart disclosed acute dilatation of the organ. The area of cardiac dullness, notably increased during the intoxication, returned

to normal in the course of the day. The cyanosis likewise disappeared.

REMARKS.

Though admitting the actual occurrence of aniline poisoning by local absorption through the external meatus, this contingency must be infrequent.

The experience of the staff at the Eye, Ear, Nose and Throat Hospital corroborates the above statement. In the last eight months the solution composed of cocaine 20 grs., absolute alcohol and anilin oil 50 minims each, has been used on a hundred cases for tympanotomy in acute otitis media, and yet not a single instance of drug poisoning, even in the milder form referred to, has come to our notice.

From this rather extensive experience we are fully justified in using the mixture for operative work on the drum and contiguous parts; on the other hand, WE CANNOT WITH IMPUNITY PLACE SO TOXIC AND SO READILY ABSORBED AN AGENT AS ANILIN IN THE HANDS OF PATIENTS FOR PURPOSES OF FREQUENT INSTILLATION.

Tympanotomy once performed, the canal should be thoroughly syringed, thus removing the danger of further absorption.

ACUTE SUPPURATON OF THE FAUCIAL TONSIL AND PERI-TONSILLAR TISSUE.*

BY M. A. GOLDSTEIN, M.D., ST. LOUIS, MO.

It is an unusual fact, and one worthy of special consideration, that while the etiology and focus of infection in acute suppurative processes of superficially located tissues and organs are fairly well known, that of the peritonsillar tissue is still shrouded in obscurity.

The faucial tonsil has now come to be regarded as a most formidable point of entrance of pathologic micro-organisms, and in this role a recent author writes of it: "There are five main avenues of infection of the system. 1. The Respiratory Tract. 2. The Alimentary Canal. 3. The Genito-Urinary System. 4. The Skin. 5. The Faucial Tonsil.

It is well established that the opportunity for infection and the development of acute suppuration of the tonsillar and peri-tonsillar tissue is unusually favorable, yet a suppurative process limited to the tonsil per se is very rare. Infection of the tonsillar crypts, superficial ulceration, membranous or caseous deposits in the follicles or over the surface of the tonsil, are very common conditions, but acute suppuration limited to the tonsil, going on to abscess formation is an extremely rare condition.

It is the peritonsillar tissue which seems to be the locus minus resistentia; for whenever an infection of the tonsillar area is followed by abscess formation, it is here that the suppurative process is concentrated.

At first glance it would appear easy to trace the etiology of an infection of the supratonsillar fossa, but when the clinical factors are gathered and the anatomical relationship of the parts carefully considered, we meet with numerous difficulties in arriving at a definite conclusion. It is a frequent clinical observation that peritonsillar inflammation and suppuration may occur without any apparent inflammation of the tonsil. In fact, I have frequently seen intense abscess formations in this area where the tonsil was small and apparently healthy.

On the other hand, the faucial tonsil may be involved in an intense acute inflammatory process and the inflammation may be

* Symposium—Presented at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otological Society, May 23, 1901, at New York.

absolutely limited to this area. I would add to these conditions another observation, that we may have an acute inflammatory process superimposed upon a long-standing pathological condition of the faucial tonsil and often under these circumstances with a much lessened power of resistance of the accompanying glandular tissue, no peritonsillar infiltration takes place. Or, we may have a peritonsillar abscess conjointly existing with a hypertrophied tonsil with gaping crypts and a parenchyma whose power of resistance is far below par, and still the tonsil itself may not be involved in the suppurative process. If, then, a close relationship exists between the tonsillar and peritonsillar structure, why should there not be a more ready diffusion or infection of a suppurative process from the tonsillar to the peritonsillar tissue or vice versa.

We have not yet found sufficient evidence to support us in the conclusion that infection of the peritonsillar area is dependent on infection of the crypts or parenchyma of the tonsil, at least not by direct continuity of tissue. I am rather inclined to the opinion that the glandular and lymphatic element of the tonsil plays an important role in the transmission of pyogenic infection to the peritonsillar tissue.

As the etiology of peritonsillar inflammation has not yet been definitely determined, our pathology and even treatment of this condition still remains somewhat imperfect. The diagnosis and symptomology of acute suppurative tonsillitis and peritonsillitis is usually simple and requires no consideration in this paper.

Another observation to indicate that our knowledge of this acute inflammation is imperfect is the fact that no matter what line of treatment is instituted, the disease usually runs its natural course, terminating in abscess formation and spontaneous perforation.

Early surgical interference appears to me rational and sometimes even imperative to avoid sequellæ and the possibility of a burrowing abscess. I would not assert that an early incision, made before the formation of pus can be determined, should be considered an abortive measure or one that will cut short the course of this affection, yet I wish to emphasize the importance of this procedure as a prophylactic and as a means of avoiding complications.

We select as the area of such incision into the peritonsillar tissue a point half way between the posterior pillar of the fauces, and the proximal edge of the uvula, about three-eighths of an inch inward from free edge of the soft palate. A guarded bistoury entered at this

point in a direction downward and somewhat inward, cutting from the tonsil toward the median line, usually penetrates the most indurated portion of the peritonsillar tissue. I follow the incision of the bistoury by the insertion of a long, angular, narrow, blunt forceps, entering the wound with the forceps closed and then spreading the blades widely, and in this manner cause a fair-sized cone-shaped wound, with the base of the cone located in the depth of the supratonsillar fossa and with a small aperture at the entrance of the wound. The object of this technique is to produce a free drainage at the point where pus formation and abscess most usually occur, and to maintain but a small wound opening in the oropharynx, so that there may be as little opportunity for infection as possible. I pack this cavity with a half-inch strip of selva-edge iodoform gauze, and direct the patient to keep the pharynx as clean as possible by the frequent use of antiseptic gargles and sprays.

If this surgical intervention has preceded the formation of pus, a natural free drain is already established when pus begins to form. This overcomes the necessity of the natural process of the pus forcing its way by pressure through the point of least resistance. This is most usually about the pillar of the fauces, but in some instances the spreading of the abscess may be directed into:

1. The deeper cervical structures terminating in a perforation externally;
2. In a direction downwards accompanied by intense edema with the tendency of this edema to spread to the glottis;
3. The filling of the abscess sac upwards into the naso-pharynx, where the pharyngeal orifice of the Eustachian tube may be attacked and a consequent purulent inflammation of the middle ear ensue.
4. Where the deeper structures are involved and a free drainage is established with difficulty, necrosis may result, and in extreme cases the internal carotid artery or jugular vein may be attacked.

I believe that early incision, even before pus formation can be determined, is a wise prophylactic measure; even though we may not succeed in aborting the course of this process.

It may be of some interest to enumerate some of the conditions accompanying acute peritonsillar abscess and their radical treatment. Where early incision is undertaken, edematous infiltration of the adjacent tissues often occurs; for this edema prompt and free scarification is indicated. As a topical application to subdue such edema, my best results have been recently obtained with a solution of adrenalin chloride, 1:1000, sprayed or mopped on after scarification.

I place but little reliance on medicines given internally in this condition, but use sodium benzoate in 15 to 20 grain doses every three or four hours, alternating this with 20 to 30 drop doses of tincture of chloride of iron given at like interval.

Much comfort may often be derived by injecting a solution of 2 to 3 grains of menthol, 2 grains of camphor, 2 or 3 drops of oil of sandalwood to the ounce of benzoinol. This may be directed to the posterior nares by attaching a soft rubber catheter to a small syringe and passing it through the nares to the pharynx. This is especially grateful in so many of these cases where the patient is unable to open the mouth, and where the pressure of the infiltrated tissues causes pain in the naso-pharynx with the extension upward to the ear or downward to the larynx.

In conclusion, then, I wish to emphasize: (*a*) that acute abscess formation in the tonsil per se is extremely rare; (*b*) that our knowledge of the place of entrance of infection into the peritonsillar tissue is still uncertain; (*c*) that the many measures thus far suggested to abort this condition have been unsuccessful; (*d*) that early surgical interference, even before pus formation has been established, is our best prophylactic procedure.

GLANDULAR COMPLICATIONS OF TONSILITIS AND PERITONSILITIS.*

BY TALBOT R. CHAMBERS, M.D., JERSEY CITY, N. J.

It is a matter of deep regret to me that under this heading I am unable to bring before your consideration anything new or startling. And, after consulting the extensive bibliography on the subject and a limited personal experience, shall simply record a few personal convictions.

In the first place, it has been asserted that the tonsil is not a gland. How is this reconciled with Osler's statement, that there is cytogenic action of the glands including the tonsil? Why does the swollen tonsil diminish on the administration of guaiac? which it does. The tonsil certainly contains a system of lymph vessels in direct connection with the vast system of the surrounding tissues. This it is that makes it a wonder that in infectious tonsillitis the other glands are not always seriously involved. Before the microscope and serum application to suspicious cases of acute throat troubles, what a comfortable aid to diagnosis was the swelling of the cervical glands, which confirmed the fear of true diphtheria.

During the past year gland involvement, in my experience, has not been a frequent occurrence; and those coming under my notice, have been chiefly in dispensary practice.

Guaiac, in small and frequently repeated doses, has caused a subsidence of the acute swelling of the submaxillary and other glands, even of the parotid, in a number of cases. In chronic cases iodine and ol. morrhuae have given positive proof of the efficacy of the combination.

Enucleation is to be preferred to incision and curettage. The wound heals by first intention generally, whereas the fistula left after incision, is sluggish and often unsatisfactory.

Rubbing or bruising of acutely or chronically inflamed glands, is most reprehensible, for it defeats the very purpose for which it is done.

I have to report an unusual number of cases of what Jonathan Wright calls pachydermis laryngis, confined to that portion of the

* Symposium—Presented at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otological Society, May 23, 1901, at New York.

pharynx just behind the posterior palatal pillar. My attention has been called to this condition by ear symptoms, such as deafness, otitis media and even mastoiditis. These were complications of what is known as the hidden tonsil. Enucleation of this hidden tonsil has, in a number of instances, set free a surprising amount of unsuspected mucus and smegma. It should not seem strange that these collections of foreign matter, situated so near the opening of the Eustachian tube, would have so direful influence upon the auditory apparatus. I am convinced that in certain cases successful treatment of otitis and mastoiditis must be supplemented by curing this pachydermis laryngis. The employment of adrenalin and cocaine has robbed the operation of most of its difficulties. After removal of the hidden tonsil, the treatment of the hypertrophy of the mucosa becomes simplified, and it yields to suitable constitutional and local measures.

CHRONIC OR RECURRENT PERITONSILAR ABSCESS.*

BY H. J. HARTZ, DETROIT.

Is due to abnormal anatomical relationship of the plica triangularis, supra tonsilar fossa and tonsils. Fibrous adhesions between these organs predispose to lacunar abscess, which burrowing into cellular tissue investing the tonsils cause peritonsilar abscess. Adhesions and an enlarged upper portion of the tonsil obstruct the outlet of the supra tonsilar fossa, causing suppuration in this space which extends into the pharyngo-maxillary space producing a chronic abscess which ultimately discharges through a fistula in the soft palate region. The tonsil region, like the vermiform appendix, is subject to abscess formation through inflammatory adhesions. The pent up secretion becomes a culture medium for pathogenic germs. Surgical measures are the indications for treatment. Excision of the upper portion of the tonsil obstructing the supra-tonsilar fossa and the removal of the plica triangularis adhesions by punch forceps. Four cases reported showed on post mortem latent encysted intra-follicular abscess, made active by an acute angina and caused death by pleurisy, septicæmia, endocarditis and pyæmia.

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UNUSUAL FOREIGN BODY IN PHARYNX.

BY W. STANLEY SAMSON, M.D., LANCASTER, OHIO.

Mrs. L. S., æt. thirty-three, presented herself in April of this year, giving a specific history, and stating that the initial lesion was contracted six years ago from her husband. The voice was husky and guttural. On examination of nose the bony septum had entirely disappeared, leaving only the cartilaginous portion as support. The other intra-nasal structures were not materially interfered with, excepting a small point of necrosis on the posterior portion of the right inferior turbinate. On inspection of the pharynx an unusual picture presented itself. A quadrangular plate of bone could be seen resting in an artificial pocket formed by a band of tissue from

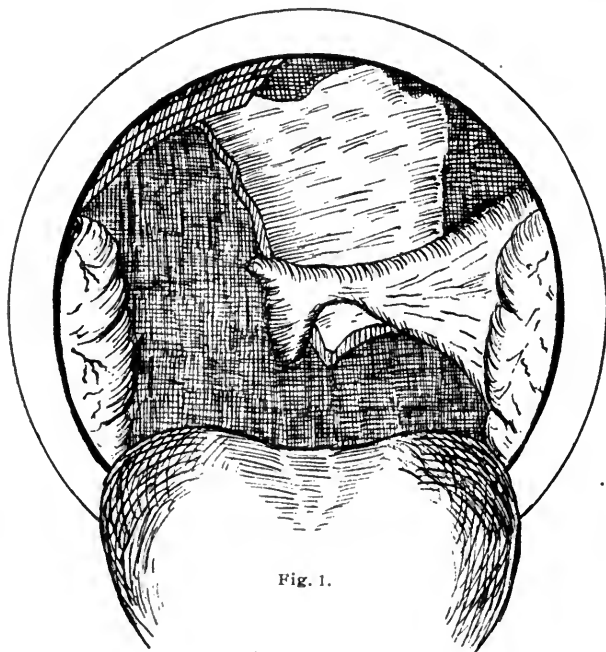


Fig. 1.

the soft palate. It is reasonable to infer that a large ulcer perforated the velum palate, eating away the point of attachment on the right side, consequently the free portion fell forward and finally became attached to the posterior wall in the center of the pharyngeal space. The above diagrammatic illustration will serve to demonstrate the appearance of the pocket, and the bony septum resting therein, adhering closely to the pharyngeal wall. The plate of bone after removal measured 25×32 m.m. Strange to say, the foreign body gave very little discomfort and did not interfere with respiration or deglutition. The ulcerative process having entirely subsided, removal of pocket was advised, but refused.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

SEVENTH ANNUAL MEETING.

Held in New York, May 23, 24, and 25, 1901.

A Case of Corrected External and Internal Deformity of the Nose. DR. T. PASSMORE BERENS (New York City). This paper will appear in full in a later issue of THE LARYNGOSCOPE.

DR. OTTO J. STEIN, of Chicago, said he understood a forceps had been used to break loose the nasal bones from their attachment to the frontal and superior maxilla. He had himself done this operation several times, and on the last two occasions had experienced great difficulty in breaking the bones loose from the superior maxilla. The condition brought about by the blows had been so severe that it did not seem to him that its repetition was warranted.

Thrombus of the Lateral Sinus.

DR. THOMAS J. HARRIS, of New York City, presented a case of thrombus of the lateral sinus. The patient was a man, about twenty-three years of age, who had been admitted to the hospital on April 3d, with a history of pain and otorrhea for about one week, and a swelling in the neck. There was no elevation of temperature at the time, and he complained only of frontal headache. A few days later an exploratory incision was thought to be necessary, and accordingly the mastoid cells had been opened, but nothing had been found. On going into the sinus a long clot had been found and removed. From that time to April 17th he had done well, but on a return of the symptoms the incision had been extended to the clavicle and the jugular vein opened. No clot had been found until the facial vein had been reached. The man had been very ill for several days afterward, and had had a metastatic pneumonia. At no time had there been any tenderness over the mastoid, and no pus had been found in this region. The pain complained of had been almost wholly over the frontal lobe of the brain. The symptomatology of this case had been quite obscure.

DR. M. D. LEDERMAN, of New York City, said that one must not expect to find the classical symptoms either in sinus or mastoid

disease. In one of his own cases there had been a running ear for ten weeks, but none of the classical symptoms of mastoiditis. The usual mastoid operation had been done, and no disease of the sinus found. Paracentesis had resulted in the withdrawal of blood. In his opinion such a procedure was not sufficient; it was better to make a bacteriological examination in addition. After a week or two, in this case, the sinus had been exposed and jugular thrombosis found. The vessel had been ligated near the clavicle and opened, but no blood found. Owing to the very bad condition of the patient, the complete operation had not been done. The patient had ultimately died. In another case there had been active involvement of the mastoid in a woman who had had one chill. The sinus was curetted to within one inch and a half of the tercula, and jugular exposed. It was tied close to the clavicle and opened, and a turbid fluid was found. About ten days afterward there had been an elevation of temperature and a swelling of the neck. On cutting down upon this, no pus was found, but an inflammation of the veins existed. Under a wet dressing the patient had made a good recovery.

DR. WALTER B. JOHNSON, of Paterson, N. J., said that he had had a similar case to the one presented by Dr. Harris. The patient had presented all the symptoms of homesickness, and in consequence she had been sent home. She had temporarily improved. When the true nature of the case had been discovered operation on the jugular had been advised, but had been declined, and the patient had died.

DR. HARRIS said that it should always be remembered that it was not necessary for the patient to have a decided chill before one felt justified in making a diagnosis of involvement of the sinus. In the case under discussion there had been no chill, but there had twice been chilly sensations. With high temperature and chilly sensations one was warranted in making an exploration.

The Nature of Cancer.

DR. HENRY. L. WAGNER, of San Francisco, presented drawings illustrative of the work done by an investigator in this city on the nature of cancer. About two months ago this gentleman, Dr. Eisen, had become infected with cancer, and was now practically in a dying condition. His important and interesting research had been completed about two years ago. This gentleman had even studied the development of the spores in his own case. Upwards of seventy cases of carcinoma had been investigated in this way, and the results would eventually published in book form.

Traumatic Dislocation of the Left Arycartilage. DR. H. L. WAGNER (San Francisco).

A Congenital Deformity of Both Auricles. DR. WAGNER (San Francisco).

DR. W. FREUDENTHAL, of New York City, said that he had seen several cases in which he had suspected fracture of the cartilages and in them crepitation had been elicited, but in these persons, as well as in others, this crepitation was normal.

DR. WAGNER said that in his case there had been crepitation at first, but it had very quickly disappeared, whereas, in cases of infraction or fracture that he had observed, this crepitation had existed much longer. He was of the opinion that when the ary-cartilage was slightly separated from the cricoid joint there would be crepitation.

Disease of the Upper Air Passages in Relation to the Mental Development.

DR. L. F. PAGE, of Indianapolis, Ind., read this paper. He said that the intimate relation between the blood spaces of the mucous membrane and the subarachnoid space had been thoroughly demonstrated, and an equally intimate relation exists between certain venous regions of the nose and the interior of the skull. The capacity of the lymphatics of this region for absorbing toxins was often observed in diphtheria, and impure blood was one of the causes of interference with mental development. Engorgement of the erectile tissues and the irregularities of the nasal cavities often interfere with drainage, and so give rise to contamination of the blood. A study of the anatomy of the nasal fossæ showed plainly that this region should be a fertile source of reflex disturbance, and it was not difficult to imagine that such irritation might exert an important influence on the psychological function of the brain. A bony spicule or an enlarged turbinate, by constant pressure and irritation, may cause exhaustion of its special center, and gradually and secondarily affect the whole nervous system. Constant overstimulation meant exhaustion sooner or later. The author said that he had been often impressed by the mental defects exhibited by children with adenoids and enlarged tonsils, and the mental improvement which followed the removal of these pathological conditions.

DR. PRICE BROWN, of Toronto, Can., said that the effect of the presence of adenoids or other hypertrophic lesions in retarding the mental development was very evident, and the fact should be noted

and emphasized. Two children had been recently brought to him with the statement that while they had been bright and intelligent in infancy, they were becoming more and more dull and stupid. Examination showed the post-pharynx obstructed by adenoids, and the younger child had never breathed through his nose. These facts should actuate the physician to inform the parents of dull children regarding the reasons for such lack of mental development.

DR. GEORGE L. RICHARDS, of Fall River, Mass., said that he had recently seen a boy who had become so dull that he had refused to go to school any longer because he realized how backward he was. On restoring nasal respiration the child's mental condition had rapidly improved.

DR. E. E. HOLT, of Portland, Me., said that this brought up the necessity for having a school physician who should not be in general practice, and who should be unusually well qualified and broadly educated. He thought every member should use his influence towards securing proper medical supervision at school. He also thought that the records which would accumulate as a result of such a system would prove most valuable from a sociological point of view.

DR. SARGENT F. SNOW, of Syracuse, N. Y., said that the general practitioner should be impressed with the fact that not only did adenoids exert a bad influence on the general development, but that good ventilation of the olfactory region must be secured. Mention was made of a boy who was becoming dull mentally, yet examination showed only occlusion of the middle and superior air passages. General medical treatment and simple local applications had speedily changed the whole complexion of the case. He had a case of epilepsy, which was undoubtedly due to intranasal pressure.

DR. FRED. C. COBB, of Boston, Mass., thought that it was most important for the specialist to ascertain just what pathological states give rise to reflex disorders and what cases of this kind can be cured.

DR. JAMES F. McCAW, of Watertown, N. Y., cited a case in which he questioned if the apparent mental deficiency was not due to deafness. He was of the opinion that the mental deficiency found in children with adenoids was often not directly the result of the adenoids, but of the associated impairment of hearing.

DR. L. A. COFFIN, of New York City, also thought the dullness was often apparent rather than real. There was frequently a loss of self-confidence, which was restored by operation. The main factor seemed to be a lack of perception. The child with the stuffed-up nose was engrossed with himself, and could not give attention to his teacher without the exercise of more self-control than he could exert.

DR. FRED. T. ROGERS, of Providence, R. I., said that for some years it had been the custom in Providence to place the backward children of the city in special schools. At one time he had examined the children in one school, and about seventy per cent of them had been found to be suffering from obstruction of respiration or from

some high error of refraction. He personally knew of certain of these children who had been taken out of these special schools and returned to the ordinary schools because of the mental improvement resulting from treatment directed to these defects.

DR. ALVA B. ABRAMS, of Hartford, Conn., said that he found patients and physicians seemed to derive much comfort from the statement unfortunately often found in the text-books, that adenoids and similar growths shrink up and give rise to less trouble in later life. While, of course, this was the result exceptionally, it would be better if physicians would forget that this happy termination ever occurs.

DR. PAGE, in closing, said that he had met with several cases in which children who had been late in talking had very soon acquired the power of speech after an operation for the removal of adenoids, and from this he inferred that the presence of adenoids sometimes interferes with the development of the speech center.

Tubercular and Syphilitic Granulomata of the Nose.

DR. WILLIAM LINCOLN, of Cleveland, O., was the author of this paper. In it he reported two cases of granulomata of the nose, presenting similar appearances, though one was tuberculous and the other syphilitic in nature. The first case was that of a woman of forty-six, who had contracted syphilis five years previously. Six months before coming under observation obstruction of the right nostril had begun. Examination showed a rounded, non-pedunculated tumor springing from the surrounding healthy mucosa. It bled easily and was not tender. On the hard palate were several characteristic syphilitic ulcers. Microscopical examination showed typical tubercular tissue with giant cells. Physical examination of the chest was negative. The patient was put on iodide in increasing doses. Within three weeks the ulcers had healed and the tumor had markedly diminished. A month later the granuloma had completely disappeared. The second case was that of a woman, forty-five years of age, who had lost flesh and had night sweats. For some months she had been troubled by nasal obstruction. Examination showed a pale red sessile mass on the cartilaginous septum without ulceration. There was no history of syphilis. Microscopical examination showed the ordinary structure of tubercular granuloma and giant cells, but no tubercle bacilli could be found. A course of treatment with mercury and iodide had no effect, and accordingly the growth was curetted. About eight months later the patient returned with a similar condition of the other nostril and in a similar site. The patient then gave evidence of tuberculosis of the lungs. It was possible to construe this case as one of primary tuberculosis of the nose. An interesting deduction was that the diagnosis could be made better by the consideration of the results of physical examination and treatment than by dependence upon his otological examination. The treatment of tubercular granulomata should be by thorough curettage.

(To be continued.)

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SELECTED ABSTRACTS.

Edited by
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EDITORIAL STAFF.

The Role of the Nasal Fossæ in the Prophylaxis and Treatment of Pulmonary Tuberculosis—MAURICE MIGNON (Nice)— *British Congress on Tuberculosis for the Prevention of Consumption, London, 1901.*

When we consider the question of the prophylaxis of tuberculosis, we must recognize the fact that contagion takes place chiefly through the air. Air is the vehicle by which the microbes invade the organism far more frequently than foods, which can be sterilised by cooking. When the air is still infective, in spite of the use of spittoons, in spite of the practice of disinfection, in spite of every precaution intended to prevent the spread of the disease, the nasal fossæ are still capable of arresting the danger that threatens us. The microbes that enter with the air are, in a large measure, arrested by the cilia of the nasal vestibule and by the very extensive and very irregular surface of the mucous membrane. One may thus recognize the bactericidal function of the nasal mucus, although it has been questioned by some authors. Clinical experience teaches, indeed, that the nasal fossæ are much more resistant to tuberculosis than the rest of the respiratory tract, and even than the bucco-pharyngeal cavity. Insufficient nasal permeability (nasal obstruction from malformations of septal ridges, from hypertrophic or congestive rhinitis, from cysts, vegetations, adenoids, etc.), should therefore be reckoned among the dangers of tuberculous infection.

From the point of view of treatment the state of the nasal fossæ is of equal importance. As the nose allows more air to enter than the mouth, nasal insufficiency results in deficient oxidation of the blood, and everyone knows how necessary oxygen is to the tuberculous. Entering by the mouth the air brings with it harmful microbes, which, accompanied by dust, favor the malady. Moreover, the air, insufficient and injurious, is unmodified, either in temperature or in pressure; it provokes bucco-pharyngeal, laryngeal and tracheo-bronchial inflammations which impede the action of treatment.

It is therefore absolutely necessary that we should be satisfied that patients presenting themselves for examination (especially those disposed to tuberculosis, and those who are themselves tuberculous) are not suffering from any cause of nasal insufficiency. If any defect is present it should be remedied, as we should enjoin the patients to breathe solely by the nose as soon as they are able, for in this habit often plays a part. Instruction on the latter point should be included in the general advice which one makes a point of disseminating amongst all classes of the population. A. A.

An Unusually Large Polypus Presenting in the Pharynx—E. V.MILLHOLAND, M.D. (Baltimore)—*Maryland Medical Journal*.

History of a large tumor occupying almost the entire pharyngeal cavity, pushing the velum palati forward, dependent from the rhino-pharynx, and reaching below the base of the tongue to the tip of the epiglottis. In order to see the tumor it was necessary to depress the base of the tongue, dislodging the tumor, and producing a spasm of the pharyngeal muscles with very alarming choking. Its lower end was broader than where it emerged from the naso-pharynx. Left nostril filled with characteristic pearly polypi, right free. Wire loop $1\frac{1}{2}$ inch in diameter was passed below the tumor and part removed through the mouth; the rest was taken, at another sitting, through the nostril, this piece being about as large as the first. Its origin was in the middle meatus. Treatment had only suggested itself two nights before when she felt a large lump in her throat preventing her from eating or sleeping, though nasal obstruction had troubled her for several months. The sudden descent into the rhino-pharynx explained the urgent symptoms. F. C. E.

Some Observations and Remarks on the Air Currents in Nasal**Respiration—CHARLES A. PARKER, F. R. C. S.—*Edinburgh****Journ. L., R. et O.*, July, 1901.

In a very interesting paper in which the author details the methods employed in arriving at his conclusions he offers the following summary:

1. That during quiet inspiration in a normal nose the air traverses the middle, superior and probably the fourth, meatus.

2. The inspiration is impeded by:

(a) Spurs and deviations of the septum and enlargements of the inferior turbinals, if they project forward and upwards. (For practical purposes the rule may be formulated, that if such abnormalities cross and break an imaginary line drawn from the anterior extremity of the inferior meatus—*i. e.*, just internal to the vestibule to the anterior end of the middle turbinal, they will cause obstruction.)

(b) Enlargements of the middle turbinated body, polypi, etc.

(c) Hypertrophies and growths springing from the vault of the naso-pharynx.

3. That in expiration the air traverses chiefly the inferior meatus.

4. That expiration will be more especially affected by:

(a) Hypertrophies of the posterior end of the inferior turbinals.

(b) Hypertrophies, etc., causing stenosis of the inferior meatus.

M. D. LEDERMAN.

An Operation for Saddle Nose—FRED. W. GWYER—*New York Annals of Surgery*, August, 1901.

The object in the correction of the deformity by the method advocated by the author is to employ tissue taken from either the organ itself or its immediate neighborhood. This is done by dissection, displacement and implantation. A somewhat elliptical incision is made on the dorsum of the nose and carried only through the skin, the enclosed part being removed. Then a flap composed of subcutaneous tissue and cartilage is dissected from below upward, leaving it attached about at the lower end of the depression. This flap is then turned upward and over so as to fit and fill in the depression. The skin is drawn together over this and sutured with horse hair.

STEIN.

The Influence of Mouth-Breathing Upon the Dental Arch—M.

D. LEDERMAN, (New York)—*N. Y. Med. Journ.*, July 13, 1901.

The dental surgeon frequently attempts to correct irregularities of the growing teeth, without advising the removal of the exciting factor. Nasal and post-nasal obstruction is the most common cause of mouth-breathing. Atmospheric pressure misdirected against the hard palate, plays an important part in the formation of dome-shaped arches, and narrowing alveolar processes.

The hanging of the lower jaw, dragging upon the facial muscles, brings a malign influence upon the superior maxilla. The slightest pressure can disturb the position of the erupting tooth—consequently, adenoids, enlarged tonsils and hypertrophic changes in the nasal chambers should be removed or corrected before any mechanical device be applied to the faulty growing teeth. By so doing these aids may act promptly, without being handicapped by antagonistic pressure through the open mouth.

Alkan has shown that in subjects where adenoid vegetations exist, the palatal arch is distinctly higher, longer and narrower than in the normal condition.

M. D. LEDERMAN.

The Future Treatment of Hay Fever—H. H. CURTIS, M.D.—*Med. Record*, July 13, 1901.

The author, after some clinical investigation, has found some success in the treatment of this distressing complaint, by the internal administration of the watery extract of flowers, principally rag-weed. The tincture and fluid extract are the solutions most available.

He also suggests from two to ten drops of the tincture or fluid extract of ambrosia artemisiæ folia, t.i.d., in water, during two weeks preceding the paroxysm.

The author publishes a few letters received from some of his patients. A few have been materially benefited by the liquor ambrosia, while others have not obtained much relief.

The "minimizing idea" is worthy of further clinical tests.

M. D. LEDERMAN.

Fractures of the Nose—MARSHALL CLINTON (Buffalo)—*Buffalo Med. Journ.*, June, 1901.

The disfiguring deformities are found in the cartilaginous framework. The cause of all fractures of the nose is direct violence. In the analysis of fifty cases, the commonest injury found was a fracture, dislocation of the three main cartilages. In true fractures of a cartilage an angular deformity exists similar to a green-stick fracture of a bone, and not an overriding of the fragments from muscular pull.

When a cartilage is fractured crepitus is readily detected in manipulation. Intra-nasal inspection will show a misplaced septum. If much external swelling exists we can wait three or four days for same to subside. In correcting any deformity with an elevator it is best to over-correct, and especially if an external dressing is applied. A careful plugging of a nostril with or without an external dressing will hold the cartilages in place.

Fractures of the bony portions of the nose are followed by a large amount of swelling and usually by emphysema of the neighboring soft parts.

An interesting case is reported in which the ethmoid was driven into the anterior fossa of the skull. The case recovered.

M. D. LEDERMAN.

Angina Ludovici—J. G. Ross (Philadelphia)—*Annals of Surgery*, June, 1901.

Two cases of this serious disease are reported. In both instances the infection arose from diseased teeth.

Spontaneous cure by rupture of the abscess into the mouth may occur, but the majority will terminate fatally unless an operation is performed.

The symptoms develop rapidly, and are of great severity. Respiration and deglutition became difficult, and the latter almost impossible.

The disease is an infection of the thick layer of loose connective tissue, which fills in the space between the symphysis of the jaw and the muscles of the floor of the mouth. This tissue is rich in lymphatics and blood vessels, and contains the ducts of the sublingual and submaxillary glands. The disease may be primary or secondary, and the pathological findings in the second case reported indicate that the disease is in all probability erysipellatous in character and the cases in an active surgical hospital should be isolated. (The abstractor treated a case of angina ludovici, resulting secondary to an acute suppurative otitis media, the infection being carried through the anterior cervical lymphatics. External manifestations were present together with sublingual edema and protrusion of the tongue. Liberal incisions into the sublingual tissues gave exit to considerable pus, and the patient made a fortunate recovery.) M. D. LEDERMAN.

Some Remarks on Chronic Post-Nasal Discharge—T. J. HARRIS
(New York)—*The Post Graduate*, July, 1901.

The author calls attention to those cases, where hypertrophic changes are not in evidence, and yet post-nasal secretion exists.

The narrowing between septum and middle turbinal is a common cause of post-nasal discharge.

Disease of the accessory sinuses must always be considered in this class of cases. The middle turbinal when enlarged or displaced frequently obstructs the natural opening of the sinuses.

The treatment of condition consists in the removal in whole or part of the middle turbinated body. M. D. LEDERMAN.

Some Observations on the Treatment of Hypertrophic Rhinitis—
CHAS. M. ROBERTSON—*Medical Age*, August.

The author considers the usually understood condition of intumescence or turgescence of the turbinals as a stage of hypertrophic rhinitis. As the condition of the first stage, or stage of vasomotor paresis persists, there is a fibroblastic organization takes place, resulting ultimately in a sclerosis of the newly organized tissue.

In considering the method of treatment these facts should be taken in mind. In the first stage either some form of medication to control the vasomotor blood supply may be used, or the dilated vessels destroyed by the use of the electro-cautery or some escharotic. In the second stage of true hypertrophy it is best to remove some of the redundant tissue, for which the author employs some cutting forceps, after which tampons of gauze saturated in hot sterile vaselin is used. STEIN.

The Clinical Significance of Chronic Hoarseness and Loss of Voice
—P. WATSON WILLIAMS, M.D. (London)—*Bristol Medico-Chirurgical Journal*, September, 1901.

Inasmuch as simple hoarseness is not seldom the only symptom noticed by the patient in the earlier stages of some grave organic affections, and, as furthermore, a laryngoscopic examination often furnishes the one and only piece of evidence enabling the early diagnosis of such organic disease to be made and successful treatment to be carried out, ere it is too late. *Hoarseness which commences or persists without adequate and obvious cause should never fail to receive careful consideration, including a thorough inspection of the larynx.* The various conditions coming under the headings of catarrhal affections, chronic infective diseases, malignant growths and paralytic affections were reviewed in relation to the symptoms of hoarseness and loss of voice and the clinical import of the hoarseness in these diseases dwelt upon.

P. WATSON WILLIAMS.

The Physiology of Voice Production—M. A. GOLDSTEIN—*Medical Fortnightly*, September 10, 1900.

In this article the author has accomplished his purpose "of presenting a comprehensive outline of the physiology of voice production, based on facts not theories, and actual observation and not tradition."

He remarks that while the development of laryngology has been unusually active, the physiology of the vocal organs has remained in comparative obscurity, and the laryngologist must contend with prejudices and traditions which are nursed by mæstros and music teachers.

To his observation that there are few teachers or pupils that have ever seen a human larynx dissected, or observed the vocal cords during phonation, may be added the abstractor's experience that the utter ignorance of these individuals as to the laws of acoustics, especially those relating to vibrating strings and air columns, would render such anatomical and physiological demonstrations practically useless.

The author analyzes as the essential factors in the physiology of voice production: 1. *Motor force*. 2. *The vibration element*. 3. *The resonators*. After considering each in some detail, and in a very lucid style, he summarizes the essential features as follows:

1. All elements carefully considered, the best form of breathing applicable to voice production and singing is the rational combination of the costal with the diaphragmatic type. Reserve force in breathing is best attained by deep inspiration, fixation of the distended diaphragm and thorax, and control of these muscles while tone is produced.

2. To facilitate vocalization, the larynx should never be tightly contracted by the muscles of the throat, especially in the production of the upper registers.

3. On the resonating cavities, their proper conformation and position in relation to the vibrating cords and larynx, depends the quality and timbre of the voice, and the careful and proper placing of tones is perhaps the most essential factor in voice production.

EATON.

Tubercular Laryngitis and Pregnancy—A. KUTTNER (Berlin)—*British Congress on Tuberculosis for the Prevention of Consumption*, London, 1901.

The influence which pregnancy exercises on tubercular laryngitis has, until now, nowhere, or at any time, been thoroughly estimated. In the literature, distributed among four authors, are to be found seven cases which can be used to exemplify the clinical picture which results from the combination of pregnancy and tuberculosis of the larynx. There has, however, so far, been a failure to deduce from the comparison and critical study of the different cases any conclusions which, if not applicable to every single case, can yet furnish general rules for guidance. This want has surely cost many a sacrifice which could have perhaps been avoided by a better appreciation of the situation.

The purpose of this lecture is to offer a suggestion as to how this bad state of things can be practically remedied.

The material which the lecturer was able to bring to bear on the situation consists of fourteen minutely described cases, and about ten or twelve cases of which more exact details could not be brought forward. Of these fourteen cases seven have already appeared in medical literature; all the remaining data are based partly on the observations of the lecturer, and partly on inquiries which the lecturer has instituted amongst a large number of colleagues of wide experience. The lecturer feels himself specially indebted to Herm. B. Fränkel and Gusseron for kindly allowing reference to their observations.

The results of this investigation were as follows: An hereditary tendency is certainly not authenticated in all cases. With three women primary lung disease was clearly indicated before the beginning of pregnancy; in the eleven other cases there was no disease, or only a minimum, shown in the lungs. Laryngeal disease existed in one case before conception, in two cases it appeared in the sixth month, in eleven cases in the first half of gestation. Both in the case of first and later conceptions the disease appeared in the same way. One woman who had suffered earlier from laryngeal tuberculosis, with exceedingly slight affection of the lungs, and who remained quite free from every disorder for fully three years after her recovery, became ill again immediately after the onset of pregnancy.

No child was apparently carried to full time; three were born in nine months, eight in eight months, three in seven. All the children were born alive. As to the subsequent fate of five of these information is wanting; of two the lecturer can testify that they still live (one seven months old suffering from severe whooping cough, the second nearly two years old was healthy). Seven children died, some immediately after birth, some, at the latest, at three weeks old, thus making out of the nine children who came under the lecturer's notice, 77 to 78 per cent.

The fourteen women, about whom more exact details are to be had, all without exception, died, some immediately after parturition and some, at the least two months afterwards.

Of the cases not so exactly recorded almost all recovered, at least partly, after parturition. It will be a matter for a later inquiry to settle exactly what proportion of cases survive the period of a pregnancy complicated by the dangers of tubercular laryngitis.

The treatment usually undertaken locally has remained entirely unsuccessful.

The lecturer thinks he may draw from the examples sketched above the following deductions:

1. In women whose recovery is hopeless, tubercular laryngitis can only be treated by the usual local remedies or by performing tracheotomy.

2. In women whose general health is favorable one may, so long as the affection of the larynx is insignificant (a little redness or

slight ulceration), pursue an expectant plan. So soon as symptoms of infiltration show themselves, or the disease extends and becomes diffuse, one should acquaint the patient with the danger of her condition, and, after obtaining her consent, should perform tracheotomy as soon as possible, and if this does not act favorably in a few days, should induce premature labor.

The earlier the pregnancy is interrupted so much the more favorable are the chances for the mother; because the strain on the mother is less the smaller the fetus is. Besides, the loss of blood is usually less in a favorable abortion. From the seventh month of pregnancy onwards the prospects for the mother are worse, because complete exhaustion usually follows the strain of parturition.

It is advisable to perform tracheotomy in advanced laryngeal disease before parturition, or at least to hold oneself always in readiness to carry it out, in order to be able to obviate sudden asphyxia during the act of birth.

The Treatment of Tuberculosis of the Larynx—JOHN SENDZIAK (Warsaw)—*Journ. Laryngol.*, May, 1901.

A historical review of the local treatment of this harrassing disease is given. M. Schmidt, of Frankfort, deserves the credit of placing the local treatment on a rational basis. Surgical treatment is an important factor towards eradicating the local manifestation of this infectious process. After a test of fifteen years, the lactic acid treatment continues to hold a foremost place, and is to be regarded as one of the best.

Local therapeutic remedies may be grouped in three divisions—the milder remedies, the more active and the palliative.

In the symptomatic treatment cocain has found a great rival in orthoform. The author claims that not only has it an analgesic action, but also a favorable action upon the tuberculous lesions themselves.

In the use of lactic acid we must begin with strong solutions (50 per cent), and quickly pass to the pure acid, which must be applied energetically by rubbing.

An efficacious remedy is *phenolum sulphuricum*, introduced by Rault, of Paris, and should be applied in 20 to 40 per cent solution. Parachlophenol is also recommended in 5 to 10 per cent solutions in glycerine. Menthol is of service in 10 to 20 per cent oily solutions by means of a laryngeal syringe.

M. D. LEDERMAN.

A Case of Paralysis of the Right Vocal Cord and the Thoracic Aneurism—B. T. BARON, M.B. (Edinburgh)—*Bristol Medico-Chirurgical Journal*, September, 1901.

A case of aneurism of the aorta is reported in which there was chronic hoarseness. Skiagrams are shown illustrating the aneurism, and demonstrating the growth in the size of the aneurism in the course of four months.

P. WATSON WILLIAMS.

Antitoxine and Intubation in the Treatment of Laryngeal Diphtheria, Etc.—B. R. SHURLY, M.D. (Detroit).—*N. Y. Med. Journ.*, July 13, 1901.

After picturing the anxiety experienced in the course of these cases, the author sums up as follows:

The results with antitoxin and intubation are most satisfactory, speedy and certain. He praises the inventive genius of Dr. O'Dwyer, and pleads for a wider field of its application.

M. D. LEDERMAN.

Unusual Dosage of Diphtheria Antitoxin—H. L. NIETERT (St. Louis).—*St. Louis Medical Review*, July 6, 1901.

It has been Nietert's custom at the St. Louis City Hospital to administer the antitoxin until he finds a shriveling of the membrane and palliation of the constitutional symptoms. In most cases 3,000 units have sufficed, that is when used reasonably early, say within the first 24 or 36 hours of inception. Some cases have required an additional 3,000 to obtain the desired results, and one case even required a total of 8,000 units. He details a case presenting the following interesting facts: 1. A total of 25,500 units of antitoxin were given without any ill effects. 2. The serum was less effective in the case, probably on account of the streptococcus infection in addition to the diphtheria infection. 3. Diphtheria bacilli were found in the abscess cavity. 4. There was rapid recovery after venesection and transfusion.

EATON.

Atresia Auris Congenita—HUNTER TOD—*Journ. Laryngol.*, March, 1901.

In a very interesting paper, accompanied by illustrations, the author reports three cases of his own, together with statistics of others.

He states that *auricular deformity* almost invariably accompanies total occlusion of the external meatus. If an artificial canal could be obtained in these cases, the ossicles at best would be found rudimentary.

The conclusions reached are as follows:

1. The deformity is not hereditary, and the cause is not known.
2. It occurs rather more often in females, and is more often unilateral than bilateral.
3. We may get accompanying deformities, chiefly due to maldevelopment of the parts in connection with the first and second bronchial arches.
4. The labyrinth is rarely affected. The hearing varies, but is present to same extent, though slight. Hearing tests give practically the same results as those in an uncomplicated middle-ear affection, but more marked.

5. Embryological, pathological and clinical observations prove operations to be useless.

6. Something more, perhaps, can be done by careful non-operative treatment and by early and assiduous instruction in speaking and lip-reading.

M. D. LEDERMAN.

Furunculosis of the External Auditory Canal—J. G. CONNALL—
Glasgow Medical Journal, July, 1901.

The author discusses the pathology, symptoms and treatment of boils in the external auditory meatus. The chief point of interest in the paper, however, is the description of those cases of furunculosis which simulate mastoid disease and which are well illustrated in a number of figures in the text. It is sometimes extremely difficult to differentiate between a mastoid periostitis and œdema over the mastoid arising from furuncular inflammation. The author lays stress upon the detection of a localized sensitive area in the meatus in the latter condition, and points out that the retroauricular groove, which is said to be obliterated in cases of œdema complicating a boil, sometimes is present in these cases.

A. LOGAN TURNER.

Varieties of Cholesteatoma—J. HOLINGER (Chicago)—*Pacific Med. Journ.*, July, 1901.

Two identical tumors, micro and macroscopically, are found in the human body.

First.—A rare tumor occurring in various parts of the body, mainly on the base of the brain and in the testicle. It usually gives no symptoms, but is an accidental find at post-mortems.

Second.—A tumor in the temporal bone.

The careful study of the anatomy and pathology of the temporal bone leaves no doubt that this kind of cholesteatoma is not rare, but a frequent condition often causing death by bringing the most infected material in contact with the lateral sinus, the dura and the pia. The most frequent avenue of entrance to the middle ear is through a perforation in the posterior upper quadrant of the membrana bordering on the annulus tympanicus, with necrosis of the adjoining bone. Bezold describes another road in cases where the whole or parts of the drum-head, especially Shrapnell's membrane, are retracted for years, as happens often in children with adenoids, or in cases of adhesion of the drum to the promontory so that sac-like excavations or diverticles will form. Here an inflammation or suppuration of the middle ear need not even have preceded.

The author holds that by far the greatest number of so-called incurable chronic suppurations of the middle ear are due to epidermization of its lining and to cholesteatoma. EATON.

Two Cases of Ligation of the External Carotid for Severe Hemorrhage—One after Tonsilotomy—Another after a Slight but a Fatal Operation—WM. W. KEEN (Philadelphia).
—*Annals of Surgery*, July, 1901.

The author does not advocate indiscriminate ligation of the carotid in such complications, but states that the operation should be resorted to more frequently, and not be postponed too long. To ligate the common carotid when the bleeding vessel is a branch of the external carotid is an inexcusable surgical blunder.

Cerebral softening and death may result from depriving the brain of its circulation.

Both of the author's cases recovered promptly without unusual symptoms.

M. D. LEDERMAN.

The Operative Treatment of Abscess When Situated in the Brain

—CHARLES A. BALANCE (London)—*Journ. Laryngol.*, July, 1901.

In a scholarly article upon this subject the well-known author emphasizes the importance of early operation and the necessity of careful after-treatment in these cases. Personal attention to the wound after the operation is just as important for the ultimate recovery of the patient as the finding of the abscess itself.

The details of the operation are clearly described; attention being directed to the sterilization of the skin. Chloroform anesthesia is preferred, and the respiration must be carefully watched as same is apt to cease, especially in cases of cerebellar abscess. Neither morphia nor strychnia should be given before the dura has been opened.

A flap is to be preferred to a crucial incision. It should be cut with its base downwards and should be considerably larger than the base opening.

In commenting upon the size of the bone opening he states that failure may result from neglect of the rule of surgery to make free opening.

The trephine should be $\frac{5}{8}$ inch in diameter, of slightly conical shape and should have teeth outside.

In temporo-sphenoidal abscess the site of application of the point of the trephine should be about $\frac{7}{8}$ inch above the suprameatal spine, the object being to expose the lowest part of the middle fossa just external to the tegmen antri and tegmen tympani. Immediately above these tegmina are the tissues in which as a rule the infection develops. If the opening made by the trephine is not large enough same should be extended with cutting forceps, drill or saw, until a parallelogram measuring $1\frac{3}{4}$ inches antero-posteriorly and 1 inch vertically is formed. The lower edge of the parallelogram is marked by that of the trephine opening.

In operating for cerebellar abscess the trephine should be placed on the bone so that its anterior edge should be just below Reid's base line. In this way the horizontal and vertical portions of the sigmoid sinus are avoided.

In cutting through the dura mater a flap is preferable to a crucial incision—a small aperture should be made with a knife. If the abscess is subcortical an incision should be made through the intervening portion of brain with a knife and not with a trocar, as the latter is apt to pass through the abscess and no pus is evacuated. The best instrument is a sharp-pointed, long and narrow knife, as clean-cut wounds heal more readily than any others. There is less risk of the abscess being missed with such a knife than when any other instrument is used.

In abstracting this valuable paper it is impossible to do the author justice, and the abstractor commends the perusal of this article "in toto."

M. D. LEDERMAN.

An Untoward Occurrence in the Use of Suprarenal Gland—C.BLOCH—*Medical Record*, July 6, 1901.

To prevent bleeding the author dusted some of the powdered extract into the nose of the patient before removing a synechia. On the following day the patient returned complaining of a pain in the throat and headache. On inspection œdema of the uvula and soft palate was seen, together with congestion of the pharynx and tonsils. A small ulceration (catarrhal) developed later. This healed promptly.

The gland had been previously applied to the same patient without any unpleasant reaction.

The author believes that the naso-pharyngeal blood vessels had contracted to such an extent as to cause venous stagnation peripherally.

M. D. LEDERMAN.

Cerebral Abscess; Operation; Recovery—FLETCHER GARDNER,M.D. (Bloomington, Ind.)—*Med. Record*, August 3, 1901.

The patient was a male, twenty-one years of age, who had a suppurating ear (left) since he was four weeks of age. Symptoms of mastoid disease developed, and a Schwartz-Stocke operation was performed. Extensive disease was found.

Later on aphasia was noticed. The temperature was normal, but the pulse fifty to sixty. Ptosis of the left eyelid, slight paresis of the right foot and deviation of the tongue to the right were present. Tenderness over the head was not detected.

An operation for cerebral abscess was performed; the trephine-pin was placed $1\frac{1}{4}$ inches behind and the same distance above the external auditory meatus. A grooved director was passed through the dura opening in the direction of the ala of the opposite nostril. (This line is the axis of the tempora-phenoidal lobe.) At a depth of $\frac{1}{2}$ inch the abscess was opened. A drainage tube was introduced, after the cavity had been cleansed, and was fastened to the skin wound by a stitch. This tube was shortened from day to day. Recovery followed.

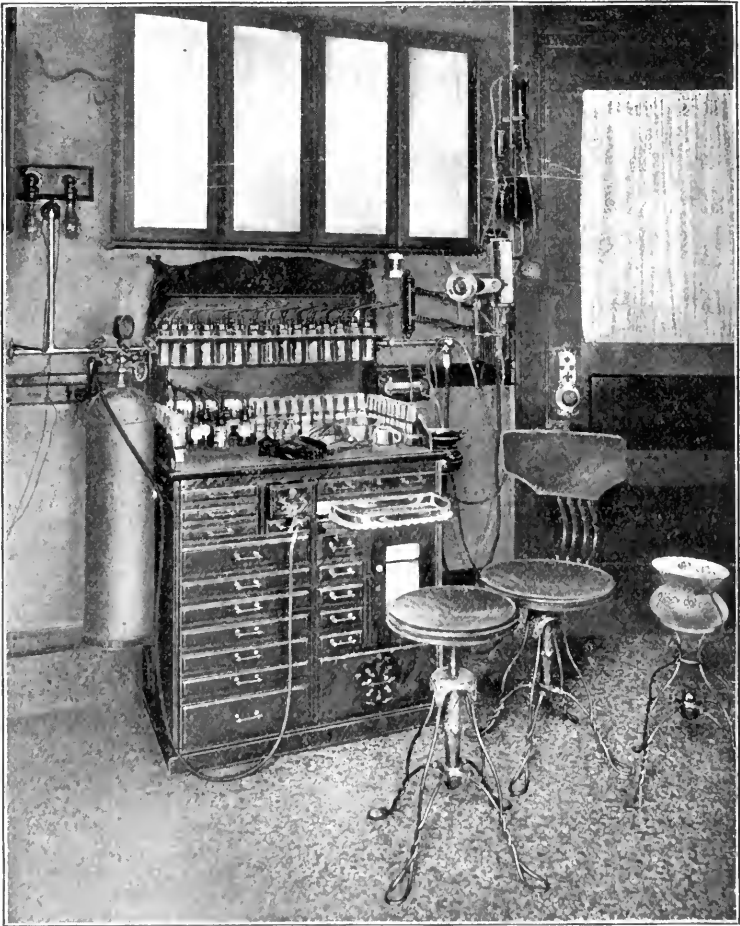
The surgical moral is that aphasia in the presence of ear disease calls for exploratory trephining.

M. D. LEDERMAN.

The Rhinological Corner — EDWIN PYNCHON (Chicago)—*Medical Standard*, October, 1901.

In the arrangement of the office for this purpose the darkest corner should be selected, as this is the best location for work done almost entirely by artificial light, and, furthermore, gives the advantage of two side walls within easy reach. A marble-top wash-stand with hot and cold water is almost a necessity and should be located against one of the walls, about two feet away from the corner. If the marble slab is of liberal size it will serve additionally as a table upon which soiled instruments can be laid.

For a right-hand operator both the gas or electric light fixtures and the instrument cabinet should be at the right of the patient and the light will thus illuminate the cabinet which is beneath it. Furthermore, by being at the patient's right, the light will not interfere with his use of the cuspidor on the opposite side.



The cabinet is the most important piece in the corner. It should not be so large as to be unwieldy, and it is the all-important work bench of the operator. The cabinet illustrated is made by the W. D. Allison Co., of Indianapolis, it being the outgrowth of several years' experience and study, and is designed to fill the wants peculiar to the practice of rhino-laryngology and otology.

In external dimensions this cabinet is thirty inches in length, twenty inches in depth and thirty-two inches in height. The top consists of a plate glass mirror. Above this is an ornamental back twenty-eight inches high. The back, a large bevel-edged mirror, supports a rack containing twenty-nine holes for spray or treatment bottles. Around the cabinet top is placed a series of loops for treatment vials. These vials are square, of two ounce size, and have medium wide mouths fitted with No. 3 rubber corks. The bottles intended for solutions of arg. nit. are made opaque by a coating of black varnish. Each bottle is kept covered with an inverted medicine glass, whereby the accumulation of dust upon the lip of the bottle is prevented.

There are nineteen drawers of different shapes and sizes and one compartment for clean towels, etc. This compartment is divided in two sections by a glass shelf. In addition to the drawers and towel compartment there is above the latter a drop door within which is a swinging glass tray which can be partially drawn out so as to serve as a shelf for instruments at a most convenient height when operating.

The small square drawer at top near the center is designed for cotton in front and syringes in the rear, as the dampness from the latter does not injure the cotton. Beneath the handle of this drawer there is placed a brass hook to hold the spray tube when not being used. At the top of this drawer is a sliding cover provided with a small opening for drawing small portions of cotton. This drawer when fully closed, locks sixteen of the smaller drawers and is itself locked by a fine Corbin non-pickable lock. The two right-hand drawers at top and bottom of cabinet and the towel cupboard are all *locked* with independent flat-keyed locks, which are operated by the same key. The lower drawer has perforations for ventilation, both front and rear, and is intended for soiled towels, napkins, etc. It works in an oiled and shellaced pigeon-hole so no dampness therefrom can extend to other portions of the cabinet.

The interior of all drawers, as well as of towel cupboard, is finished with a white enamel, and each drawer has a glass bottom so as to be as nearly aseptic as possible. Each drawer fits in a closed pigeon-hole. In this way no drawer is left exposed by opening or removing the drawer above it. Another advantage in having each drawer in a pigeon-hole is that the instruments cannot spring or tilt up above the drawer top so as to interfere with its being opened. The drawers vary in size and depth.

The chair, stool and cuspidor holder shown in the illustration were fully described in *THE LARYNGOSCOPE* for April, 1897. Of

course a fountain cuspidor in place of the one shown is even more desirable, though its considerable expense will preclude its general use.

The outlet to which the parallel gas bracket is attached should be 42 inches above the floor. If the gas bracket has a short third joint, say 5 inches in length, it will be found to be much more adjustable. Such bracket should be provided with both gas and electric light, which should be side by side or at the same height. For a gas burner I have for years used the "Niagara," and like it much better than the ordinary argand. The Welsbach lamp gives a beautiful and intensely white light, though the friability of the mantle is a great drawback and is most objectionable when used with an adjustable bracket, the motions of which give frequent and fatal jars to the mantle.

The gas burner had better be surrounded with an asbestos cover which may also carry a bull's eye condenser. Wall & Ochs, of Philadelphia, make an excellent cover of this kind. The use of the electric light in the past has had one disagreeable drawback, and that is the reflection of the lamp filament in the field of vision. Avery & Burrell, of Chicago, make a new electric lamp, shown in cut, which gives a strong and pretty light and in which this objection is overcome.

The compressed air tube should reach from the left end of the cabinet, and the writer has it attached to an auxiliary and pressure-controlling air-tank, which is shown in cut. The primary tank is not shown and can be placed in any convenient closet, or even in the cellar. It should be of about 30 gallons capacity.

For spray bottles, those made by the Davidson Rubber Co. are found to be the most satisfactory, though in place of their single stream right angle tip I use one throwing three streams which diverge in fan-shape. For nebulization, I employ single-hand nebulizers.

A. A.

Dust as a Factor in Diseases of the Upper Respiratory Passages—W. SCHEPPEGRELL (New Orleans)—*American Medicine*, April 6, 1901.

Microscopically dust is made up of vegetable, animal and mineral particles, which vary in size. The effects upon the organs of respiration are due to mechanical, traumatic, chemical and pathological changes.

Conditions arising from pathogenic causes are most frequently met with.

Certain occupations predispose the individual to injurious results. The author mentions the observations of Peacock, who found that forty (40) per cent of the workmen employed in a grindstone factory died of tuberculosis. M. D. LEDERMAN.

Rhinology in Relation to Eye Diseases—J. JAMESON EVANS—*The Birmingham Medical Review*, September, 1901.

The author considers the most common mistake in ophthalmic practice, where the nose is implicated, is in connection with ethmoidal and lachrymal diseases and he has seen several cases treated for months as dacryocystitis where the source of the mischief lay entirely in the ethmoidal cells, the lachrymal trouble being secondary. On the other hand, ethmoidal diseases, in consequence of the absence of nasal symptoms, have been referred to the ophthalmic surgeon to have the minor lachrymal complaint attended to, an oversight which may have been attended with some danger. Both frontal and ethmoidal diseases have been mistaken for exostoses. In diseases of the sphenoidal sinuses an examination of the field of vision in conjunction with the use of the ophthalmoscope would aid the diagnosis. It would be a wise precaution to examine the nasal cavities and naso-pharynx in all cases diagnosed as retro-bulbar neuritis or retro-bulbar hemorrhage. Cyst in the floor of the orbit may be the first indication of a cystic sarcoma of the upper jaw. In many cases of epiphora the obstruction is due to intra-nasal disease involving the lower portion of the nasal duct.

P. WATSON WILLIAMS.

Report of a Case of Laryngeal Stenosis—I. A. ABT—*Pediatrics*, June, 1901.

The patient, thirteen months old, admitted to hospital with symptoms of laryngeal stenosis. The smallest tube of O'Dwyer's intubation set could not be pushed down in position in the larynx without using an amount of force which seemed unjustifiable. Both the sitting and recumbent positions were tried, but to no avail. Tracheotomy was performed, but patient died in twenty-four hours. Attempts to introduce the tube after removal of the larynx proved futile.

STEIN.

The Influence of Impaired Hearing Upon the Development of the Child—F. A. POWELL—*Iowa Medical Journal*, September, 1901.

By not recognizing or paying proper attention to impaired hearing in children, the mind of the child, being deprived of its necessary cultivation, ceases to expand as it should. The disposition, through ridicule and harsh remarks, becomes sensitive and uncontrollable, and the general health, from want of exercise and fresh air, suffers more or less from malnutrition and malassimilation.

STEIN.

Otomycosis—FLETCHER GARDNER—*Wisconsin Medical Recorder*, Sept., 1901.

In one case cultures made from the white scales and yellowish spores found in ear canal showed the *aspergillus flavescens*. "This form of the *aspergillus* has never been met with in this country as an aural parasite," the author says. [Burnett reports having found it once in twenty-eight cases. S.]

Again, in a second case under the care of the writer, cultures showed a growth of *sterignatocystis olivacens*, said to have never been described as occurring in the ear. STEIN.

An Unusual Ear Case—D. B. HAZELTINE—*The Clinique*, September, 1901.

In a patient of forty-five years the symptoms of nasal catarrh, accompanied with sense of fullness and noises and deafness in left ear, were complained of. In bending head forward a shifting sensation was experienced in the affected ear with improvement in the symptoms.

The drum membrane showed bulging above and retraction below. Incision over bulging area brought forth no fluid; nor did inflation by means of catheter improve matters. Not until Siegel's otoscope was employed was a quantity of fluid demonstrated with a corresponding improvement in hearing. STEIN.

BOOK REVIEWS.

The International Directory of Laryngologists and Otologists. Containing the names and addresses of practitioners engaged in the study and practice of laryngology and otology. Compiled by RICHARD LAKE, F. R. C. S., London. In one neat foolscap 8vo. volume, pocket size, bound in flexible leather. 5s. net. Weight $\frac{1}{2}$ lb. Prix 6.50 frs. (cuire). Poids $\frac{1}{4}$ kilo. The price includes postage to any part of the British Isles. Orders from abroad must be accompanied by a remittance of 5s. (*plus the amount of postage payable to the place of destination*). This can easily be computed from the weight of the book given above). Rebman & Co., 129 Shaftsbury avenue, London.

The second edition of this directory has received much revision and has been considerably enlarged in the matter of the American Otologists and Laryngologists. There are still many errors and omissions. With the continued zeal of its editor, however, and the active co-operation from all sources, we hope to see the next edition improved in the matter of American addresses.

We most heartily commend this valuable little desk companion to our readers. M. A. G.

" CORRESPONDENCE.

HAMILTON, SCOTLAND, September, 1901.

EDITOR THE LARYNGOSCOPE :

At the end of an interesting paper by Dr. Jonathan Wright, in THE LARYNGOSCOPE of June, which has recently come to my notice, two cases are mentioned as being of epileptic nature and as naso-pharyngeal reflexes, resulting from palpation pradenosis. There was a slight convulsion in both cases. It may not be too late to call in question the epileptic nature of these attacks or the wisdom of dignifying them by the name of naso-pharyngeal reflex, and to ask whether they are not simply cases of fainting. It does not seem sufficiently recognized that a fainting attack often begins with a slight cry and a slight convulsion, as, indeed, one would expect in comparatively sudden cerebral anemia. I have repeatedly seen this happen both as the result of nasal interference and some slight surgical operation elsewhere. The cry or groan, the slight convulsion and the sudden unconsciousness give a superficial but striking resemblance to epilepsy, which, there is some reason to think, at one stage of the fit also involves cerebral anemia, but with which there is no further connection unless it be "neurotic temperament." [Dr. Leonard Hill has shown how sudden cerebral anemia produced by ligature of the cerebral arteries causes spasm.]*

One of my cases was an asthmatic, aged fifty, who had an attack similar to that described by Dr. Wright. The first time I interfered with his nose during cocainization and examination there was a groan, twitching of the face and the patient fell to the ground unconscious. He had not had enough cocaine to cause this and subsequently bore much larger doses, and as he gained confidence,

* Proceedings Royal Society, June, 1900

prolonged operative procedure without fainting. Another case, which might have been described in Dr. Wright's own words, happened during the incision of an abscess in the hand of a sturdy young man. There is no history of epilepsy or anything like it in either case, before or since, and there is, according to Dr. Wright, none in either of his cases. All are cases of fainting and are interesting as a clinical parallel to Dr. Hill's experiments. The three associated with nose and pharynx are not nasal or nasopharyngeal reflexes any more than the other is a hand-reflex.

I remain, yours truly,

JAMES HAMILTON, M. D.

THE LARYNGOSCOPE.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

VOCAL NODULES.*

BY CHARLES H. KNIGHT, M.D., NEW YORK.

Professor of Laryngology Cornell University.

Of the various names given to this pathological condition, that selected for the title of this paper seems the most appropriate. It has already been applied by Elsberg and a few others to certain anatomical formations in the larynx, but confusion is not likely to arise since its use in the latter sense has not been generally adopted. The term "singers' nodules" implies a professional factor by no means always present. A large proportion of these cases in my experience has been in those who use the voice in singing but little or not at all. "Chorditis tuberosa" suggests an inflammatory origin, whereas marked hyperemia even is rather an exceptional feature. "Trachoma of the vocal bands" and "pachydermia laryngis" are terms used to designate processes histologically allied to "vocal nodules," but very different in their clinical aspects.

It is impossible for me to add anything to the admirable picture of this interesting disease drawn by F. I. Knight in a paper on "Singers' Nodes," read before this association in 1894, and by C. C. Rice, in a paper entitled "Chorditis Tuberosa," read in 1890. In the contributions to the literature of the subject during the past year it may be noticed that Rosenberg reverts to the idea first propounded by B. Fraenkel that these nodes are of glandular origin, in spite of the fact that sections of the tumors by Rice, Kanthack and others prove beyond question that they are composed of hyperplastic tissue.

* Read at the annual meeting of the American Laryngological Association, May, 1901.

In the opinion of Chiari mucous glands are very seldom met with in their constitution, while Garel and Bernand in a study of 144 cases and numerous sections found not the slightest trace of glandular elements. The observers just quoted agree that they are more common in women than in men and that they are not infrequent in children. One of T. Morris Murray's cases was only seven years of age. As to the greater prevalence of the condition in women the chivalrous explanation has been offered by Chiari that they make more effort than men to produce a pure and pleasing quality of tone. The confusion and disagreement prevailing as regards nomenclature and pathology apply to nearly every question bearing on this subject, partly it is believed in consequence of failure to clearly differentiate the lesion. For example, the relation of vocal nodules to tuberculosis is still undetermined. In the discussions at our meetings we find arrayed against the tubercular origin of the lesion, or its special association with tuberculosis, French, Delavan, F. I. Knight and Rice, while Daly has always met with it, "with one or two exceptions, in patients with tuberculous tendencies, either inherited or acquired." Jonathan Wright expresses the opinion that "in exceptional instances there seemed to be a diathesis, particularly among phthisical patients," and Simpson believes that while the nodes are not necessarily tubercular "a tubercular subject would be more disposed to their formation." In my own observation the connection between vocal nodules and tuberculosis is purely accidental.

The opportunity to study a vocal nodule developing almost under one's eye is not often given, but has come to me within a few months and has suggested several perplexing questions. My patient is a lady approaching middle life who never sings, except occasionally in service on Sunday, but who is a good deal of a talker. She came to me originally for a laryngitis, and the most noticeable thing about her voice in addition to its huskiness was a very pronounced "throaty" quality. In the laryngoscopic mirror were seen the usual appearances of a chronic laryngitis, and the epiglottis was buried in a mass of lymphoid hyperplasia extending across the base of the tongue. Treatment consisted of destruction of the lymphoid tissue at repeated sittings with the electric cautery and sprays to the larynx of alumol, twenty grains to the ounce of water. This was followed by decided improvement and the patient went through the summer very comfortably. In the latter part of September she caught cold and had a slight cough for a week or so. During this attack she sang in church one Sunday under circumstances which particularly excited her interest and emotions. Her voice became hoarse and did

not regain its smoothness with recovery from the cold. When the larynx was examined three weeks later a small nodule could be seen projecting from the upper surface of the left vocal band at the junction of the anterior and middle thirds. The margin of the band was free. Both cords were muddy, but there was no special hyperemia. The voice was hoarse, rattling and throaty, especially where the change from chest to head register takes place. (G. A.) The larynx was very intolerant, even under strong applications of cocaine, so that it did not seem judicious to attempt any radical interference. Rest of the voice, inhalations twice daily of a solution of menthol in albolene, five grains to the ounce, and spraying the larynx every other day with a watery solution of alumnol, twenty grains to the ounce, was the course of treatment followed for several months without much change. At times it seemed as though the nodule were shrinking and occasionally around it would appear quite an area of hyperemia. Almost always the latter phenomenon could be traced to some indiscretion in diet, as to exposure, or in the use of the voice. Finally at my suggestion a course of elocution was begun with a professional voice trainer, who has had considerable success in correcting bad habits of speech. The method used is similar in many respects to the system of vocal exercises advocated by Curtis in the treatment of vocal nodules. The latter may be briefly described as follows: The first point insisted upon is a correct method of breathing. The upper ribs are raised, the chin is depressed and respiration carried on by the diaphragm and lower ribs. An effort is made to focus tones in the face, producing them as it is expressed *dans le masque*. The word or syllable used in vocalizing is "ma" or "mau," the "m" being formed, of course, while the lips are closed. The muscles of the pharynx and neck are thus supposed to be completely relaxed and the vocal bands to be in a state of greatest possible tension. A peculiar tickling vibration of the lips against the incisor teeth can be felt during the humming "m" sound, provided the muscles about the mouth are properly relaxed. Most remarkable results from the practice of these vocal gymnastics are claimed in various laryngeal derangements due to misuse or fatigue of the voice. I suspect that the exercises are substantially nothing more than a modified rest, as compared with ordinary vocalization, and the expression "vocal massage," sometimes used to describe them, seems to me a gross misapplication of the term.

The treatment of vocal nodules is divided by Capart into hygienic, medical and operative. Nearly every observer refers to the possibility of their spontaneous disappearance under prolonged

rest, but Capart avers that he has never seen the slightest benefit from rest except as regards a concomitant inflammation of the larynx. Sprays and insufflations of astringents and antiseptics he looks upon as useless, and chemical caustics, like nitrate of silver and chromic acid, he discards on account of the risk of their diffusion. Ablation of the growth with a fine delicate forceps, and if that is impracticable its destruction with the galvanocautery are recommended. He warns against the use of so-called "punch" forceps lest an excessive amount of tissue be removed and the voice be irreparably damaged, but on the other hand offers some reassurance by recalling the experience of Labus with what he calls "decortication" of the cord. Vocal rest, especially after operation, change of method in singing, and possibly climatic influences may contribute to a cure. The difficulty of enforcing absolute silence in these cases can seldom be overcome. The delicacy and patience required for endolaryngeal manipulations with a view to restoring or improving the function of the larynx lead one to hesitate in adopting operative methods. It may be urged that in any case the voice is impaired and cannot be made much worse by damage to the cord in attempts at removal, and from this point of view doubtless some would be persuaded to submit to operation, and take the chances.

The decided benefit in certain cases of inoperable malignant disease following ligation of arteries supplying the affected region led to the reflection that analogous effects might be obtained with that powerful ischæmic, suprarenal extract. Accordingly daily instillations of adrenalin chloride, one to five thousand, were made in the present case for a period of three weeks. In the meantime the vocal exercises were continued. The improvement in the voice is apparent both to the patient and her auditors. The nodule itself has certainly shrunk to some extent, so that we feel encouraged to persevere with this line of treatment.

In view of the tediousness and disappointment attending the treatment of vocal nodules it would be a satisfaction if we might discover their cause and thus be enabled to adopt preventive measures. Laryngeal lesions and vocal defects due to some disease or deformity of the accessory organs of speech are usually remediable. In the production of the so-called "throaty" voice the extrinsic muscles of the larynx, especially those attached to the hyoid bone, are brought into action. It is easy for anyone to demonstrate this upon himself by placing the fingers in the hyoid region during tone formation. The result of this muscular action

is a dragging down of the hyoid bone, the base of the tongue and the epiglottis, in consequence of which the sound waves are repressed within the larynx and fail to reach the resonating chambers. The causes leading to the formation of throaty tones are, first, 1
a misconception on the part of the voice-user that the quality of tone is thereby improved; second, a strain or tiring of the intrinsic muscles of the larynx due to faulty vocal method which demands the 2
help of the extrinsic muscles, and finally, a mechanical obstacle to the emission of the voice at some part of the upper air track. The 3
first is most prevalent among the uncultured and those unfamiliar with pure musical tones. The second is unhappily common and may be ascribed in part to the ubiquity of ignorant self-constituted voice-trainers. Most conspicuous among the third of the causes enumerated must be mentioned lymphoid hyperplasia at the base of the tongue, hypertrophy of the lingual tonsil. The last was most graphically illustrated in my case. It should not be inferred that the throaty voice is responsible for all vocal nodules, or inevitably creates them. Were such the case those curious anomalies would be the most frequent of laryngeal lesions. But, in my opinion, *misuse* of the voice is a much more probable element than *overuse*. } x
In a recent paper on this subject Krause maintains that the misuse of the voice productive of nodes occurs in singing and not in speaking. Furthermore he says that the "throaty" voice is due to an effort to overcome a lack of tension of the vocal cords whose elasticity is impaired by the nodular development within their structure. With apparent inconsistency he adds that the increased tension of the vocal bands gives rise to a pachydermia first in the region of the nodule, then at the vocal processes, and finally in the interarytenoid commissure. In other words the node causes diminished tension; an effort to increase tension causes the node. As to the relative frequency with which the singing and the speaking voice suffer from this lesion it seems to me that *à priori* we might expect the latter to be first to succumb under stress, such as would be involved in talking to a deaf person, in a large auditorium, in the open air, or against a loud noise, for the simple reason that the range of the speaking voice is much more restricted than that of the singing voice. The former is generally limited to two or three notes of the scale, the latter often extends over more than two octaves. Hence much less variation in the motility of different segments of the vocal bands occurs in the former than in the latter. It is possible that an inquiry into the mechanism of the vocal bands may throw some light on the etiology of these nodules. It is found that some anatomists,

Morris and others, call attention to the fact that the thyro-arytenoid muscle distributes fibres to the margin of the cord which act in a manner analogous to that of the stop-finger on a violin string, limiting vibration to one portion of the band. Is it not conceivable that contraction of certain bundles of these fibres with too much vigor or excessive frequency may lead to hyperemia, tissue building, hyperplasia at their point of attachment on the surface of the band? Or possibly a minute localized hemorrhage may take place and subsequently undergo organization. It would seem reasonable to suppose that the constant tugging upon these fibres in the production of a certain tone might induce an effort of nature to fortify the region of their insertion by throwing out new tissue, or that an effusion of blood might follow a rupture due to sudden and violent muscular contraction. The idea that attrition of the vocal bands might be held accountable as an exciting cause has always seemed to me untenable for the reason that during phonation space must remain between the bands in order to permit the blast of air to escape and hence there can be no friction. Moreover, the node often has its origin, as in my case, not on the margin, but on the upper surface of the band. In the translation of Joal's work on "Respiration in Singing," Wolfenden asserts that the nodules are produced by attrition resulting from the so-called *coup de glotte*, "which can not be made without bringing the vocal cords in contact." "Contact" is very different from "attrition." The former even to a forcible degree must be admitted in the production of the "stroke of the glottis," but it is impossible to suppose under any circumstances an actual rubbing together of the vocal bands in such a way as to cause structural changes. If the theory suggested above be correct, the obvious conclusion is that a faulty method of phonation is generally induced by some anomaly in the upper air track and can be overcome only by restoring the latter to a normal condition. In excising or destroying the nodule we remove the result and not the main cause of the difficulty.

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THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 287.)

THE PRAE-RENAISSANCE PERIOD.

To the superficial reader of mediaeval history the causes of the Renaissance may seem mysterious and puzzling. It requires, however, only a moderate amount of reflection and study to understand that the infusion of the vigorous new northern blood into that which flowed in the veins of the old races, dwelling around the Mediterranean, produced a new and, from the cross breeding, a more vigorous race of men. Amid the ruins of Rome, ignorance, superstition and fanaticism, the interminable wars, the terrible devastating plagues had induced a grovelling misery and a poverty, for many ages foreign to the sunny slopes of the Cis-Alpine hills and fertile valleys of Italy. The primeval forces of Nature thus working through evolutionary laws again produced in this garden spot of the world a race of men from which the weak in body and mind had been weeded out. The soil was ripe for the seeds wafted from other civilizations now rapidly approaching collapse.

Darembert* does not succeed in convincing us that much if anything that may be called medical learning really was to be found in Europe in that period which lies between the deluge of the barbarians from the north and the introduction of Arabian science. The ruthless hand of Gregory the Great (Pope 590-640), had long since demolished the library on the Capitoline hill which the munificence of Augustus had founded. His motto: "Ignorance is the mother of devotion," supplied then a sufficient defense as it now furnishes an ample explanation of the deed. He himself was one of the most learned men of his times, but the intellectual treasures of the Ancient World had been lavished on his barbarian soul in vain. Some manuscripts, it is true, with other weaklings had found a refuge in the hidden recesses of the cloisters of sordid monks, who sought as eagerly for safety in this world as for Paradise in the next, but these manuscripts escaped rather through the negligence than the respect of the priestly

Learning in
the Middle
Ages.

* "Hist. des Sciences Med." 1870, Vol. I, p. 277.

rabble.* Famous schools, it is true, existed at Monte Cassino, Amalfi, Naples and Salerno during the Middle Ages, but what their learning consisted of it is impossible to know. Professor Ordonaux' elegant edition of the *Regimen Salernitanum* gives a hint of it in many places. We may easily form a picture of a circle of lusty, merry, dirty monks sitting around a rough table, and with beer mugs and drinking horns held on high roaring forth the refrain:

"Si tibi serotina noceat potatio vini
Hora matutina rebibas, et erit medicina."

The origin of the School of Salerno is unknown, but there is little doubt that such learning as there existed was derived through the Jews and possibly through other sources from the Arabians. It was there, or at Monte Cassino (1086), that Constantine, an African prelate, after a sojourn of thirty-nine years among the Arabians, where he is said to have been a pupil of Avicenna, wrote his plagiaristic works which he did not dare, and perhaps did not wish, to credit to the pagans Hippocrates, Galen, Avicenna and Haly Abbas, from whom everything in them of value was miserably transcribed. By such means, at first secretly, then openly, the knowledge of the Arabs found its way into Europe through Italy and Spain, and this process was greatly facilitated by a few enlightened individuals, who, like Constantine, had spent their youth at the courts of the Arabian monarchs.

Averrhoes introduced skepticism, "le flambeau de la science," as some Frenchman calls it, to the Arabians and was duly hated by the Mahometan and Christian dogmatist alike, but this was a mere undercurrent in Christian Europe for a long time, too feeble to be perceived amidst the robust but grovelling superstition of the times. Pope Sylvester II had been educated at Cordova, spoke Arabic like a Saracen, and had been elevated (999 A.D.) by the politics of the time to the chair of St. Peter as a creature of the Emperor Otto III. The influence of the Arabians on the science of the Middle Ages may be strikingly witnessed in the *Inferno* of the pious Dante where Hippocrates and Galen are joined to the shades of Avicenna and even to that of the hated Averrhoes. (Canto IV l., 144.)

* Daremberg: "Hist. des Sciences Med." Vol. I, p. 256, quotes from a mediaeval author as follows:

"Clerici nostri temporis potius sequuntur scholas Anti-Christi quam Christi, potius dediti gulæ quam glossæ: potius colligunt libras quam legunt libros; libentius imitantur Martham quam Mariam."

Nevertheless, as Guizot says, it is difficult to imagine what would have happened after the downfall of the Roman Empire in Europe if the Christian Church had not been organized. It stepped in first as the handmaid and then as the mistress of the civil power, and thus by furnishing some sort of authority, having its real foundation deep in the souls and superstitions of man, brought order out of chaos. It was Gregory the Great who was active in the destruction of learning in Italy, but who nevertheless was a great power of cohesion where all things tended to disruption. Gregory VII was the great Hildebrand who, when elected pope, substituted ecclesiastical for imperial tyranny, and in 1077 King Henry of Germany waded barefooted through the snow of the Alps to humble himself at the feet of the pope at Canossa. Again the civil power gained the ascendancy under that liberal man of genius, Frederick II (1194-1250), king of the two Sicilies, who had imbibed much learning and freedom from superstition by his Arabian education and affiliations. He rendered the greatest service possible to the art of medicine by his decree ordering the dissection of the human body.

Influence of
the Church.

As has been said Greek men of learning, rats from a sinking ship, flocked into Italy with their precious manuscripts from Constantinople, many coming before the crisis and many escaping at the final shipwreck in 1453. They found for themselves and their learning an asylum in Italy, where the great families of the Medici, the Farnese, the Este, the Colonna, the Gonzaga, enriched and enlightened for the most part by maritime trade, and urged by the influence of Petrarch, gave them a welcome and an enthusiastic reception which fanaticism had denied the Arabians. But Petrarch's welcome extended rather to other branches of letters than to medicine, whose practitioners he lashed with a fierce satire from which Molière later drew his inspiration. A hundred years before the fall of Constantinople, on hearing of the loss at sea of a vessel carrying a valued and a learned Greek friend, Petrarch's first thought was to inquire if perchance the surviving sailors had not saved some Greek or Latin manuscripts which might have been among his effects.

Influence of
the Greeks.

It has been noted that from the time of our first knowledge of the School of Salerno to this epoch medical learning was derived almost wholly from Greek sources through the Arabians. This prae-Renaissance period of perhaps 300 or 400 years includes Henri di Mondeville, Mondino di Luzzi, Guy di Chauliac, Arnold di Villanova, Petrus d'Abano, Brunus, and others, the first fruits

of the seeds of learning of modern Europe from the old stock of Hippocrates and Galen.

Influence of
the Crusades.

Even the most cursory review, such as this professes to be, of the salient influences in the spread of knowledge can not ignore the crusades. As two thousand years previously the Grecian hosts are said to have attacked the walls of Troy, the holy city of Jerusalem was the scene of another furious onslaught of western brute strength on an eastern metropolis. Homer draws a more artistic and vivid, but no more fearful picture of the sack of Troy than later historians do of the capture of Jerusalem by the crusaders. Returning, if his thirst for blood and holy relics was not satiated, the crusader at least brought with him, as doubtless did the ancient Greeks, more enlightenment than he set out with. The survivors of the mighty hosts brought with them back to their homes not only the bones of the saints and the splinters of the true cross, but a broadened knowledge of men and things. The aggregations of such large bodies of men, under the necessity of acting more or less harmoniously, laid the foundation for the spontaneity with which various movements of European social, political, and religious activity subsequently occurred. Different nations and different conditions of men became, to some extent, mutually helpful in their various struggles towards liberty with that ecclesiasticism which had fattened on their estates and their temporal power during the absence, which the priests had urged upon them.

Italian
Science.

"The eagerness with which the Arabians had collected the medical works of the Ancients hardly surpassed the zeal with which the Italians of the Fifteenth Century pursued the same course, and Cosmo Medici may be compared in this respect with Khalif Mamun, but let us mark the difference. The Arabians translated, they often even destroyed the originals, and their own ideas so permeated the results that they theosophized Aristotle, turned astronomy into astrology and made use of these in medicine. The Italians on the other hand read and learned. The true Aristotle eventually crowded out the Arabian*; out of the unaltered writings of the Ancients they learned their Science, Geography directly out of Ptolemy, Botany out of Discorides, the Science of Medicine out of Galen and Hippocrates."†

* Guizot (*Hist. de la Civilization en France*. Edit. 16, T. 12, p. 182) asserts positively that the knowledge of Aristotle was not, during the Middle Ages, derived exclusively from Arabian sources. Alcuin did much in the time of Charlemagne to keep alive the acquaintance of the learned with the works of the Ancients.

† Ranke: *Geschichte der Päpste*, Bd. 1. Cap. 2.

The Ancients not only supplied them with knowledge as they did the Arabians, but they inspired them with such a thirst for it that their own authority in science was soon destroyed, something which had never happened with the Arabs. The popes and the clergy in fostering at first these beginnings of intellectual life were conjuring up Genii which in a few centuries were to rob them of all but a vestige of their power, riches and veneration. It is this progressiveness which in medicine distinguished the European from the Arabian civilization.

Although the Greek physicians from Constantinople brought their language and their manuscripts, they themselves had perhaps directly little influence. Their scientific attainments were insignificant as compared to the Arabians. They were the unworthy custodians of the relics of a former civilization, the puny descendants of a once vigorous race. They were full of lies, superstition and effrontery, and they imposed on the credulity of those still more benighted than themselves, if we are to believe what Petrarch says of them. "To lie like a doctor," he declares was a proverb in his day. This depravity is easily perceived in the counsels of worldly wisdom, which the prae-Renaissance medical writers scattered so plentifully through their works. Henri di Mondeville or Hermondeville in the frank discourse of his surgery is very amusing, but he, quite as much as Boccacio (b. 1313) and later Benvenuto Cellini (b. 1500) displays the general disregard of ethical or moral considerations in his relations to his patients and confrères.

In the history of medicine, keeping step as it does with the history of civilization, it is a long, dreary stretch of a thousand years from the sack of Rome by the Vandals (455) to the fall of Constantinople by the Turks (1453), and even Sprengel, the most phlegmatic of historians, breaks into pæans of rejoicing when he arrives at the Renaissance. In medicine this properly begins with Berengarius, or Berengar del Carpi, but there is a prae-Renaissance period, to which I have referred above, which it will be interesting to glance at for information as to the nose and throat.

Among the Salernitan verses from Prof. Ordranax' translation we may select "De Raucidine Vocis" or Hoarseness: The School of
Salerno.

" Oil and raw apples, nuts and eels, 'tis said
With such catarrhs as settle in the head,
And leading to a long intemperate course
Of life, will render any person hoarse."

And the cure for it is

“DE REMEDIIS CATARRHI.”

“Fast well and watch. Eat hot your daily fare.
Work some and breathe a warm and humid air;
Of drink be spare; your breath at times suspend,
These things observe if you your cold would end.”

“Si fluat ad pectus, dicatur rheuma catarrhus,
Ad fauces bronchus; ad nares esto coryza.”

It is singular that, in quoting from the school of Salerno, we so frequently offer evidence of their convivial habits, snugly ensconced as they were in their cloisters sheltered somewhat from the stormy experiences so abundantly detailed in mediaeval history. *Johannis Platearius** (1225?), relates that his father cured a “certain Salernitan who was playing at dice, and suddenly felt that he was attacked by ‘squinantia.’ When he began to be suffocated and had showed the painful place with his finger, as he was unable to speak, my father, of blessed memory, a remedy having come to his mind, placed a wedge between the patient’s teeth, and forced into his throat a piece of wood and the skin of the apothume was ruptured, and thus, blood flowing in great quantity, he was relieved.”

‘Squinantia.’”

Apropos of this word “squinantia,” we may note an instance of transformation through the vicissitudes of time, language and translation from the technical Greek to the English vernacular. We have seen how in the time of Aretaeus and Galen they were disputing as to the etymology and significance of the words *kynanche* and *synanche* (*vid.* pp. 115 and 128). How this word was translated into the Syriac and Arabic dialects I am not sufficiently versed in Oriental linguistics to know, but when it emerged into Mediaeval Latin it was “squinantia,” a term unknown to classical Latin. In the English of Huxham,† not a bad example of a classical English medical writer of the eighteenth century, we find the term changed into “squinz,” and from this to the familiar *quinzy* is but a step.

Gurlt (*Geschichte der Chirurgie*) quotes from Brunus de Longobardus, who ended his work in 1252, a passage by which we may see the inane confusion into which this old dispute of the Greeks had thrown their witless heirs:

* *Salernitani excellentissimi practica brevis: De Squinantia f. 177 b. Edit., 1497. Practica Jo: Serapionis dicta breviarium.*

† “An Essay on Fevers, to which is now added a Dissertation on Malignant Ulcerous Sore Throat.” (1775.)

"Nam hujus apostematis tres sunt species, quarum una dicitur quinantia—alia dicitur sinantia—alia dicitur squinantia." He tries to define the difference between these, but he leaves the modern reader in a fog, and there can be no better illustration found of the paucity of original thought and observation, and even of feebleness of imitation which is so characteristic of prae-Renaissance medicine. In the *Glossulæ Quatuor Magistrorum* the same differentiation is adopted by Rolando.

A still further example of obfuscation and pedantry may be obtained from the same source. Lanfranc was a surgeon who died in 1306, and this is his idea of the topography of the neck; it is untranslatable:

"Quidam tamen faciunt differentiam inter collum et cervicem; gulam et guttur; quæ tamen omnia sub colli nomine comprehenduntur multotiens. Intra collum et gulam ab intra locatur meri, sive ysophagus—ex parte vero interiori versus gulam locatur canna pulmonis—super has duas vias et epiglottis ex tribus cartilaginibus compositus. (The epiglottis was the usual mediaeval name for the larynx, 'canna pulmonis' for the trachea). Guttur dicitur eminentia epiglotti; et latus gutturis dicitur gula." Arnolando di Villanova* (1285) speaks of "squinantia" as a throat inflammation "in quodam folliculo quod est inter ysophagum et tracheam." Going back to the first of these writers who drew their knowledge principally from Arabian sources, we look in vain through the ponderous tome of Constantine the African (1015–1087)† for anything varying from Hippocrates, Galen and Avicenna except in the obscurity of diction and the misapprehension of its sense. It is largely a catalogue of drugs including, for the throat, the swallow prescription and the usual line of stercoraceous remedies. The same may be said of Gariopontus (1040). They were Salernitans and the school had then been in existence, for a time under the Saracens, for several centuries. It only formally went out of existence with many other old things in the time of the great Napoleon, but it had begun to decline even in the time of Roger of Parma (1230), and his disciple Rolando, who were the first writers in whom there is any evidence of originality, and this is seldom apparent. From the text of Rolando‡ we learn that for nasal polypi he at first purged the patient and then "Cum spatumine usque ad profundum evellatur et sagitella inscidatur." The sharp spatula

Operation for
Nasal Polypi.

* Opera, Edit., 1509, f. 166.

† "De Morborum Cognitione et Curatione."

‡ "Glossulæ Quatuor Magistrorum." Edit.: Daremberg, 1854, P. 129.

referred to is evidently from Galen. The recommendation for the use of a saw may have resulted from the description of the use of the knotted string in the manner of a saw as described by Paulus Ægineta, just as the latter probably through imperfect manuscripts derived the string operation from the more rational and humane sponge method of Hippocrates. At least in some of the translations from the Arabian books reference to this "sagitella," usually in the way of comparative illustration of the knotted string method, may be found; but Sprengel* says that Rhases recommends the saw as well as the ligature for the removal of nasal polypi. Rolando seems familiar with the knotted string method also, but nevertheless I imagine there is confusion here arising from the transcription.

Tonsillotomy,
Uvulotomy,
Tracheotomy.

Holmes refers to Roger and Rolando as having observed a neoplasm of the larynx. This, when we consider the general state of medical diagnosis in their day, seems very improbable. The passage in the "Glossulæ" to which he apparently refers does not seem to warrant that interpretation†, but it seems clear to me that enlarged tonsils was the condition the writer had in mind. The last sentence doubtless refers to tonsillotomy. Immediately thereafter follows the reference to the treatment of elongated uvula. For this he had a good deal of faith in an ointment, doubtless carried in the boxes of the peripatetic practitioners of the day, the quacksalbers. This salve was supposed to destroy proud flesh, and cause the growth of better. If no other remedy was efficacious the cautery was to be used as recommended by the Arabians and "Ypocras." He quotes Avicenna in a warning to be observed after uvulotomy, clearly derived in exaggerated form from Galen. The patient should not lie on his back, lest epilepsy, apoplexy and paralysis should be caused. He also had reason to recommend as a gargle the water in which a fat hen had been boiled, a prescription which may be found in the Arabian works. Petrus d'Abano‡ warns against incision of the trachea as dangerous and gives his puerile reasons for the opinion. Arnaldo di Villanova (l. c.) repeats the Arabian hair-pulling formula for relaxed palate, and the fat-hen prescription for sore throat. As for the ridiculous "Lilium Medicinæ" of Bernard Gordon (1285-1307), the title reflecting the stilted style of Chivalry with which Cervantes

* "Essai sur la Medecine," II, 337.

† Est autem quedam passio que nascitur in gula juxta epiglotum quod dicitur folium (?) que quandoque est una et quandoque sunt due carunculæ tenues et late et modus folii que tracheam arteriam et vocem impediunt; cum vero patiens aperit os ad loquelam, se elevat et foramen trachee arterie; cum vero os claudit, subsident, unde patiens vix potest formare aliquod verbum intelligibile. Que passio numquam curatur nisi beneficio cyrurgie.

‡ "Concil. Diff." Edit.: 1522. He lived 1250-1320 A. D.

later played such havoc, this seems an utter annihilation of cerebration. Dyspnea was supposed to be due to "weakness as in children on account of the debility of the nerves and paralysis, on account of spasm and many such things," but he recognizes uvulotomy and hints at the advisability of tracheotomy in very desperate cases. The intractability of chronic hoarseness is expressed, however, in the tersest language to which modern science could hardly add anything. "*Raucedo post unum annum non recepit curationem. Raucedo ex rheumate numquam curatur, nisi prius rheuma curatur.*" *Platearius* (l. c.) gave expression to the same opinion. All these authors shared the credulity of their age. In the records of sorcery, so abundant in the Middle Ages, the accounts of cries and coughs and barkings, especially among the hysterical recluses of the convents, were the symptoms of the convulsive spasms of the pharynx and larynx still occasionally seen, and perhaps, as Dupuy suggests,* prodromata of the more general convulsive seizures. The ignorant credulity of the age was extremely likely to cause the burning of these poor wretches.

But greater men had begun to appear and in *Henri di Mondeville* and *Guy di Chauliac*, his pupil at the University of Montpellier, we have evidence of advancing intelligence and knowledge, which manifests itself however chiefly by a better understanding and rendering of Galen and the Arabians. Their productions in their naiveté are amusing, in their form approach somewhat to the standard of good literature, and in their substance are valuable as giving an insight not only into medical knowledge and ethics, but also to a considerable extent into the spirit and general conditions of the times. There is also to be noted some improvement in the latinity.

Henricus de Amondeville,† as he styles himself, declares in his Proemium that he set out to write his *Manual of Surgery* in 1306. This is just ten years before *Mondino di Luzzi* is said to have dissected in public the human body, and it will be interesting to note the advances, small but significant, in anatomical knowledge which are evident in the work of *Hermondeville* (for thus he is also called at times), over the state of it revealed in the citations I have made. He describes the olfactory lobes, not according to *Theophilus*, whose description was not noted until recent historians have brought it to light; but according to Galen as a part of the brain and the true organ of smell: "Just in front of these

Henry of
Amondeville.

* *La Médecine dans le Moyen Age.*

† "*Die Chirurgie des Heinrich von Mondeville*," edited by Pagel.

is a certain fossa which is between the two eyes, under the upper extremity of the nose, where the said fossa begins." (He is describing the internal nose). "The reason for the creation of this fossa is twofold: 1. That it may receive the superfluities of the brain, and that they may be expelled through it. 2. That in it the air, carrying a sort of odorous matter, may remain quiet until it is taken up by the organ of smell. From the said fossa spring two canals towards the mouth and the palate through the ethmoid bone. The use of the said canals are threefold. 1. That when the mouth is closed there may be an inspiration of air to the lungs. If this were not so it would always be necessary to keep the mouth open. 2. By blowing forcibly through these the said sieve-like bone (the ethmoid) may be purged of its filthy viscosities. 3. That they may aid in the enunciation of letters."

The description of the external nose which follows is a little better, but while an improvement may be noted over his immediate predecessors, it may be easily seen how much inferior this is to the passage in Galen (Vid. pp. 137 and 142), from which it has been taken, especially in the physiological part of it. The same remark applies to the anatomy of the throat. "From the stomach by way of the—esophagus* there goes a membrane, which surrounds the whole mouth on the inside, and the proof that it comes from the stomach is that when a man is touched under the mouth (in the back of the mouth?) he immediately has a tendency to vomit. Extending into the mouth is the upper end of the esophagus and the air passage which is called the 'canna pulmonis et trachea arteria,' whose opening into the mouth the cymbalar cartilage covers which is the third part of the organ which is called the epiglottis, *i. e.*, the nodule of the throat, which cymbalar cartilage rises up when a man talks and covers very loosely the food way, and when a man swallows food it is depressed and then loosely covers the tracheal artery and the food way remains open, wherefore unless at the time of swallowing it should cover the airway food would enter it, as often happens when, etc., etc."

We meet also with the queer remark of Hermondeville that the flesh of the tongue is white in order that it may change the watery saliva into a color similar to itself. He repeats the mistake of Galen that the lower jaw is made of two bones. Among his thera-

* "A stomachio mediante meri vel via cibi, vel ysophago, quæ sunt idem." Stomachus in classical latin usually meant the esophagus, but was frequently loosely applied to the stomach, while meri is apparently an Arabian word adopted into the Mediaeval latin.

peutics invocations are occasionally recommended. In all the writers before Vesalius epiglottis was a term applied to the whole larynx, and this and other anatomical terms, as among the early Greeks, were used in a bewildering way when they tried to describe the throat.

We now turn to the great surgeon of the prae-Renaissance period, Guy de Chauliac,* and so far as the nose and throat is concerned he does not differ materially from his preceptor, Hermondeville. He speaks of the ethmoid bone as belonging to the frontal, which he calls the coronal. In it are the holes for the eyes and "les colatoires des narilles divisez par certaine addition ossue en forme d'une creste di geline a la quelle est planté le cartilage qui despart les narilles." (P. 41.) Although Guy has something to say of wounds of the nose and bandaging, he passes over its diseases very superficially, quoting Avicenna that the obstruction of the nose is "humoral, or fleshy, or crusty," the symptoms of which are the inclination to hawk, the impossibility of breathing with closed mouth, tinnitus aurium, nausea; in short, not a bad summary of lesions and symptoms, but not very specific. His treatment was the snuffing up of water impregnated with various mollifacient and astringent drugs. He recommends for this purpose also the urine of camels, having copied this, of course, from the Arabians, who, in their long and terrible journey through the burning sands of the desert, not infrequently were compelled to quench their thirst with it and to perform their ablutions with sand. His account of the diseases of the mouth and pharynx are also merely repetitions of the medical writings of the Greeks and Arabians. He quotes from Mesua a description of a canula for cauterizing the uvula, "in the head of which at one side is a fenestrum in which the uvula is engaged; and then through the canula is introduced a hot instrument like a knife and it is incised by cauterizing." He also follows the procedures the Arabs had adopted from Paulus Aegineta, for the tonsils and for foreign bodies, quoting Haly Abbas that if it is a leech in the throat, give onions with vinegar, or pull it off with the forceps. In quinzy the following treatment was used after pus was supposed to be present. Quoting from the practice of his predecessors, he says: "The abscess having matured, they first try to incise it with a lancet, if it is to be seen, and the mouth is rinsed out with parsely or with some other of the usual detergents. If, however, it is so far

Guidi Cauliac.

* "La Grande Chirurgie de Guy de Chauliac—Composée en l'an, 1363." Edit. of E. Nicaise, 1890.

within as not to be seen, it should be broken with the finger nail or by rubbing with something if possible." We are reminded of the rough and ready operation of the old Salernitan on the dice player. He refers to this remarkable procedure of Roger, which we have noted elsewhere for another purpose. "A half cooked piece of meat should be taken and tied to a long, strong cord, and the patient should be made to swallow it, and while he is swallowing it, it should suddenly be jerked out with violence by the cord, and the abscess thus ruptured. The same may be done with a sponge." This was the way Aetius and the Arabians removed foreign bodies, but certainly there is no lack of originality in this for a tonsillar abscess. Through Avicenna he quotes Hippocrates' intubation process by means of gold and silver tubes for the relief of dyspnea, reproducing the Arabian remarks upon tracheotomy. The same may be said in regard to nasal polypi and ozena. "Of the ulcers which are in the nose, some are without superfluous flesh and others with it. * * * One should not despise these ulcers of the nose, since as all say they lead to polypus, and polypus of every kind is pernicious." For them he recommends the process of Albucasis, the knotted cord, etc. "Split open the bone according to the four masters, and burn it."

Botium was the name in the Middle Ages for goitre, and they knew nothing better, according to Guy, than the use of setons for the surgical treatment of it—quite a fall from Celsus.* Goitre during these times, as is well known, was cured by the laying on of royal hands, and the patriotic partisans of the kings of England and France carried on an active and spirited warfare in quite orthodox fashion, as to the claims of priority of their respective monarchs.

THE RENAISSANCE.

The removal of the papal court in 1305 to Avignon, where it remained for seventy years, gave Italy an opportunity to develop her own wonderful terrestrial and maritime resources and to lay a solid foundation for the development of civilization. For without wealth there can be no civilization, and wealth, as Spain gorged with the gold of the New World later demonstrated, does not consist of heaps of the yellow metal drained by conquest or superstition from other countries. In Italy the crusades and the religious devotion which made them possible had swelled the leaking coffers of the

The Influence
of Maritime
Commerce,

* It was not until 1443 that Thomas of Sarrano, afterwards Pope Nicholas V, discovered a manuscript of the *De Medicina* of Celsus. Hippocrates was translated from the original about the same time.

church in vain; but when the enterprise of commerce had made her merchants princes, the arts and sciences again blossomed along the shores of the Mediterranean. When we remember the foundations laid in the lives of Darwin, Huxley and Hooker in our own day by the knowledge acquired on voyages in her Majesty's service, we may understand the influence such maritime development exercised on the budding civilization in Italy in the fourteenth and fifteenth centuries. The sails of Venice brought not only wealth but enlightenment to her wharves.

The Genoese sailor, the son of a wool comber, had learned indirectly from the Arabs, whom his sovereigns were just driving out of Spain, that the world was round and he was fitting out his three ships to prove it, less than forty years after the fall of Constantinople had extinguished science in the East. The church had denied it. In the process of the suppression of the Pelagian heresy and the establishment of the doctrines of St. Augustine, the book of Genesis had become the reference hand book for the cosmography as well as the cosmogony of the church. Supported thereby, we find the infallible Roman pontiff fixing the age of the world at 6,000 years, while as he walked in the gardens of the Vatican, his sandals were grinding shells which the sea had left there a million years before. At first the hierarchy did noble work in fostering the feeble shoots of learning which began to appear, but later when the vigorous plant began to overshadow them, they strove to destroy it, or rather to train it to grow as they wished, but in vain. It had outgrown their powers. Petrarch (1304-1374) ridiculed the ignorance of the physicians, and Boccaccio (1313-1375) exposed and laughed at the vices of the clergy long before any one understood or attempted to invalidate the slavish compliance with authority which so degraded the human mind. Now, 500 years after Petrarch, we are only reminded that this mental slavery once existed by noting some remnants of it in the waste places of modern civilization, and these are the very localities in which modern scientific and political achievement had their beginning in Europe under the Arabians and the early popes.

Petrarch.

The school of Salerno began as early as the time of Charlemagne and Haroun al Raschid during the Arabian Renaissance, and became the Civitas Hippocratis to which Richard of the Lion Heart and other great personages resorted in the search for health. By the end of the crusades the Artisan Guilds began to be formed, family names were adopted, commerce and industry sprang up. The commons in the cities wrested their charters of freedom from

their sovereigns in the twelfth century. The great Gothic cathedrals arose at Paris, Rheims, Rhouen, Strasburg, Amiens. Saint Louis (1226-1270) founded hospitals in Paris, and his confessor thought he was doing more by establishing the theological school of the Sorbonne which took his name. The school of Bologna, where Mondino taught, was started in 1119, and before the fifteenth century universities were flourishing in nearly all the countries of Europe, and all under the jurisdiction of the church.

Revival of the
Study of
Anatomy.

The Arabians, as we have seen, shrank in holy horror from the contamination of a dead human body, and the students of the School of Salerno, animated as it was by Arab influence as early as the eleventh century, studied the anatomy of the pig. Catholicism also proscribed the study of anatomy by dissection, and at that time the church represented all the public sentiment there was, but the enlightened Frederick II, while successful in his warfare with the pope, commanded (1224 ?) that a human body should be dissected at one of the schools at least once in five years, but after him the emperors kept no abiding power in Italy. The church in those stormy times could not be long kept from temporal power. An edict of Boniface VII, published in 1300, again prohibited dissection not only in Italy but in all the countries under sacerdotal authority. Nevertheless only a little time after this, in 1308, the senate at Venice decreed a body should be dissected annually, and in 1316 Mundinus di Luzzi, called the restorer of anatomy, being the professor in the University of Bologna, had the audacity to dissect two cadavers in public. Besides the importance of this record in the history of medicine it is also a suggestive indication of rising insubordination against papal authority, much weakened by the dissensions which, as we have noted, had removed the court to Avignon, and had resulted several times in the existence of more popes than one. It was also the servile beginning of freedom from the exclusive authority of the Ancients. Mondino did little more than open the thoracic, abdominal and cerebral cavities and refuse to see anything not described by Galen. He says* the functions of the tonsils are "to gather the humidity which they generate for the lubrefaction of the trachea, and to fill up the space so as to make it level between the 'gula' and the epiglottis, and to act as a shield to the apoplectic veins." (The carotids.) He gives the name *coopertorium* (a cover) to the epiglottis, the latter name as usual being applied to the larynx,

Mondino di
Luzzi.

* *Anatomia—Restituta per Joh. Dryandrum. Marburg 1541.*

which is described entirely in the sense of Galen and with the same superficiality and lack of original observation we have already noted in other writers of this period. For nearly two hundred years apparently little advance was made, in spite of the greater prevalence of the practice of dissection. Let us not be astonished at this, but reflect on the few men to-day who see at the autopsy table or under the microscope anything not set down in books.

Achillini indeed made some important discoveries (1463-1512) in other regions of the body, but the editions of his work are so rare and so wretchedly executed, I have had to depend upon the citations of subsequent authors. It was not until the study of anatomy became a passion with the princes of Italy, as it had previously been with the Ptolemies in Egypt, that the great strides noted in Berengar began. Under their protection the arts and sciences flourished, and the study of the anatomy of the human body by dissection wrought great changes in the practice of the Medical Art.

Mondino is called the Restorer of Anatomy, but it is to Berengar del Carpi, who taught surgery at Bologna from 1502-1527 that we owe the actual demonstration of any considerable number of new discoveries. Although he avowed himself to be only the commentator of Mondino, he used the work of the latter principally as a text from which to elaborate his own more extensive and accurate observations.

Berengar del
Carpi.

In Benvenuto Cellini's entertaining autobiography we read his very uncomplimentary reference to Berengar as a charlatan and a mountebank, an impostor and a miser who made enormous sums of money out of his new mercurial cure for cases of the French disease, which according to Cellini, at Rome was "molto amici di preti." We receive a hint of his experience with syphilitic cases by the error he was led into through his defective acquaintance with its laryngeal manifestations. He notes* the declaration of Zerbi that certain French singers have their uvulæ cut off that they may acquire a "grossam vocem," but he does not believe it, because he has seen those having no uvula who were hoarse and had the worst kind of a voice. Following Galen he had great respect for the physiological importance of the uvula. Notwithstanding that we have cause to remember, in reading the works of Carpi, the declaration of Aristotle that authority in science is the worst enemy of the advance of knowledge, and notwithstanding the bad stories related by the uncharitable Cellini, Berengar in his Commentaries and especially in his

* "Carpi Commentarii. Anat. Mundini," 1521.

Cartilages of
the Larynx.

Isagogæ showed that he was an acute observer of anatomical facts. He thought when he noted the nasal muscles he had made a new discovery, but he was not bold enough to be sure of it in the absence, as he thought, of any knowledge of them by others. He declared, at first with some hesitation in the *Commentaries* (1521) and later more positively in the *Isagogæ* (1535) that the larynx is made up of five cartilages, the arytenoids or "cymbalar cartilage" being double, but like his predecessors he speaks of the larynx as the epiglottis, and uses the word *coopertorium* as did Mondino. He says that he had cured patients with perforation of the trachea, but clings to the old belief that cartilage will not heal, "because," he says, "it is spermatic." He speaks of the substance of the "membranoso co-opertorio" (the epiglottis); "around this there is some fat, especially in the place where it is bound to the thyroid cartilage." Most writers referring to this passage agree with Morgagni in believing that Berengar observed the laryngeal glands abundant at this point, but after reading the text it seems to me more probable that he referred to the lymphoid material in the glosso-epiglottic fossa which we now call the lingual tonsil. He was the first to describe the thyro-epiglottic muscle. He was the first to describe the sphenoidal sinus, which he considered the source of catarrh, and he denied that the ethmoid plate was pervious to the passage of the cerebral fluids. He supposed this to take place through the sphenoidal sinus, because he noticed that in one case the nutrient canal of the bone communicated with the sella turcica beneath the pituitary body, which was supposed to secrete the cerebral fluid. So far as I see this was the first departure from the idea of the ancients, and was an attempt to adjust physiological theories to new anatomical facts, which finally after more than a hundred years ended in the demonstrations of Schneider. He not only noticed the sphenoidal sinus and conjectured that this was the route of catarrhal discharges, but he is said by Cloquet to have been the first to note the existence of the frontal sinuses. Berengar speaks of the lachrymal canal and of the passage of tears through it, explaining that this is the reason we are able to smell odoriferous collyria. Otherwise his anatomy of the internal nose is very superficial indeed.

Sphenoidal
Sinus.

The Revolt
from Galen.

Some of the *prae-Vesalian* writers on anatomy strove to explain the countless variations they observed from the *Anatomy of Galen* by supposing that men in those glorious days were not made in the same mould as at present. They had degenerated and altered in their structure. This has always been a favorite idea with the poets from Ovid down. It is embodied in the very word

descendants, frequently lingers in the fond recollections of age, and even haunts the title of Darwin's famous book, who indeed has demonstrated the mutability of anatomical structure, but not in a manner to support the assumption of the anatomists of the early Renaissance, who made timid excuses for the originality of their own observations. One may easily see by this servile acquiescence in authority, that it was not only the temporal and spiritual tyranny of kings and priests which enslaved the minds of men. It was the distrust of intellectual infancy, terror stricken at the thought of the loss of support and guidance if they impugned the authority of their predecessors. No fear of papal excommunication and the burning fagots, no dread of being impaled and racked and hung and quartered was at the bottom of this faltering. How ineffectual these instruments of orthodoxy were when used may be comprehended by noting that this intellectual slavery, without the fear of fire here and hereafter, endured quite as long as did that spiritual and political subservience for the perpetuation of which they were employed.

A few years before the death of Berengar (1550) the open revolt to ancient authority in anatomy was to appear. Vesalius. Vesalius was born at Brussels about 1515, just one year before that mighty ruler, Charles V., who had inherited half of Europe from his various ancestors, ascended the throne of Spain and four years before he was crowned Emperor of the Holy Roman Empire. A great man is Charles V. in political history, and not less great in medical history is his physician, Vesalius. He became professor of anatomy at Padua, and taught also at Bologna and Pisa, before the emperor called him to his court. He made many an anatomical blunder himself, but it is to Vesalius that this fundamental branch of our art owes its modern development. He possessed that attribute of genius, which has been expressed by Carlyle as the ability to see with one's eyes, and the inability not to believe what one sees. He declared that Galen had never dissected the human body, but had depended upon examining those of animals. He ridiculed the excuses which had begun to be made for the discrepancies in Galen's anatomy when compared with the results of dissection. He was much readier to believe in the fallibility of the ancients than that the structure of man had varied in a thousand years. It is very evident that as to the anatomy of the nose and throat Vesalius committed more errors than he corrected, but his persistent refusal to accept either Galen or his preceptors' word for that which his eyes taught him was

false, his unwearied diligence, and boundless energy wrought great changes in anatomical research. He published his great work which would have been a worthy monument for the labors of a lifetime in 1542, at the age of twenty-seven. He insisted upon the greater value to be derived from personal dissection of the human body, a matter left to barbers and underlings by his predecessors and by many of his contemporaries, than by the continual perusal of the anatomical descriptions of the old Greeks and Arabians, and we find him declaring in bitter scorn of one of his preceptors, who had turned against him, that he would be quite content that as many strokes of the knife should be inflicted on him as he had ever seen his master practice on man or beast. (De Radic. Chyn. Epistola.)

For him, as for his predecessors, and for his successors for more than a hundred years, the secretions of the brain percolated through the base of the skull, but he denied that it found passage through the cribriform plate, following Berengar thus far; but he supposed that it went through the lacerated foramina. Nevertheless he ascribed to the perforations in the cribriform plate the function of transmitting air and odors to the brain,* urging the necessity† of combating the idea of Galen as to the exit of fluids through them. His old teacher, Sylvius, whom he tried to treat with deference and respect, loaded him with opprobrious epithets and scurrilous abuse for impugning the authority of Galen in this and other particulars. While Vesalius recognized the mamillary processes as the seat of olfaction he did not ascribe to them the functions of nerves, overlooking the filaments which pass from them and calling the optic nerves the first pair at the base of the skull (l. c. Lib. IV, cap. 3). We have seen that Theophilus had given a better account of them many centuries before, but his observation seems to have been entirely lost to view until revealed by the industry of comparatively recent historians. We may readily understand that the mind of man must necessarily find some explanation for the cribrous condition of the bone here, and it was quite impossible to banish erroneous speculations until a correct understanding was ready to take their place. Zerbi, who lived at the end of the fifteenth century, and met a horrible death at the hands of the vengeful and suspicious Turks now in possession of Constanti-

The Olfactory
Nerves.

* "De Corp. Humani Fabrica," Lib. I, cap. 6 and 12.

† "Ad Joachim Pellant. Epist."

nople,* described the filaments which the olfactory bulbs give off, but he regarded them as prolongations of the mamillary processes through which the cerebral secretions found their way into the nose. Most of the anatomists of the sixteenth century regarded them as too soft to be really nerves, but Achillini, who died in 1512, described their distribution in the nose.† Massa, who is said to have died in the same year as Vesalius (1564), wrote‡ this in regard to them:

"Notwithstanding the learned and never to be sufficiently praised Galen, on an examination of the nerves springing from the brain, first at the anterior part where the substance of the brain is, which is called the mamillary caruncles, there are to be observed two soft substances, yet they are not so soft as is imagined, like to the form of other nerves, and they descend, without any doubt, to the nares, and are attached and distributed to the inner substance of the nostrils, for furnishing the sense of olfaction." Nevertheless he hesitates very much to give them the name of nerves, but is inclined to believe they should be so regarded in spite of their soft consistence, and he wonders that the anatomists do not name them as the first pair. Thirty years subsequent to this Varolus,§ in 1572, described them as nerves, and in 1627 Spigelius added them definitely to the other cranial nerves. "Septem his paribus quae vulgo sic recensentur octavum addimus, quod nervos olfactorios constitit,|| but even he did not follow the filaments through the cribriform plate. Indeed, even Schneider made the egregious blunder of not accepting them as nerves. Bauhinus,¶ in his commentaries on previous anatomical works, in 1621, still followed Plato in the idea that odor is a vapor of the nature of fire, which ascends through the cribriform plate. Fallopius accepted the old doctrine of Hippocrates that vapors ascended through the sutures of the skull. These vapors Galen, as interpreted by Jacob Sylvius, believed to be sep-

* He had been sent for from Italy to treat a Turkish Bashaw, who improved so much under treatment that the busy practitioner did not think it necessary to remain longer, but sailed away loaded with the gifts of the grateful patient. No sooner had he gone than the patient had a relapse and died. His relatives, believing Zerbi had poisoned him (or did they want his fees?), overtook the ship in which he had sailed away, brought him back to Constantinople, sawed his son in quarters before his eyes and then did likewise with him. This story explains in itself why the Turks had to send away for a doctor, as did the old Persians in earlier times.

† I have derived from Sprengel, Metzger ("Nervorum Primi Paris Historia"), Cloquet and others this account of the work of Zerbi and Achillini, as the originals are, for me, illegible.

‡ "Epist. Med. et Philosoph.," 1542, Epist. VI, p. 58.

§ Cloquet ("Osphresiology," 1821) gives a most exhaustive history of these nerves, as indeed does Metzger (l. c.)

|| "De Corp. Humani Fabrica," Lib. VII, cap. 2.; Ed. 1645, p. 193.

¶ "Theatrum Anatomicum," 1621.

arated from the coarser impurities in the lungs which were voided as phlegm, the vaporous portions ascending to the head. Thomas Bartholinus,* as late as the time of Schneider, although he places the olfactories in the category of nerves, does not recognize the filaments as penetrating the nasal cavity. He speaks of the sphenoidal antrum and of the hole in the sella turcica as evidence of the entrance of air and the discharge of the pituitary secretions from the ventricles through them, but he also allowed that secretions passed through the cribriform plate, and had the Hippocratic idea of vapors.

We must now return to the epoch of Vesalius. He led the revolt against Galen, but he had many followers in it. In a matter which much later was the source of a very important controversy he agreed with Galen. He plainly figures an intermaxillary bone.† In this he was followed by Fallopius and Columbus. In his comments upon the descriptions of the pharynx we find that he was as much bewildered as we have been, for he says: "*Ingenti nominum pelago fluctuamus.*" We are, however, still somewhat at sea when we read his chapter "*De Faucium Glandulis,*" though we find some advance over the Galenic anatomy. I will translate literally: "There are three kinds of these glandules, one of which, near the root of the larynx, is situated at the sides of the *aspera arteria* (thyroid?) we have mentioned in the previous chapter. The second is placed higher than the larynx, since it is seen when we open our mouths in the space which exists between the foramina of the nostrils and the larynx, one glandule being placed at each side, in form and characteristics very similar to a gland indeed. It corresponds very much in structure to other glands, but is much looser, and in this respect distinguished that it forms the saliva and moistens the *aspera arteria* and the esophagus together with the whole extent of the mouth." It seems probable, from what follows, that he had observed the parotid gland, but had supposed it to be co-terminous and identical with the faucial tonsil. His third kind of glands was apparently the cervical lymph nodes.

His reference to the cartilages of the larynx is rather amusing as indicative of his weariness of the clamor of those who believed anatomy better studied in the work of Galen than in that of the Almighty. We have seen that Berengar had already pointed out that there are two arytenoid cartilages. Vesalius repeats the as-

The Inter-
maxillary
Bone.

"Glands" of
the Throat.

* "*Anatomia*," Lib. IV, cap. 8; Edit. 1666.

† "*De Humani Corporis Fabrica*," Lib. I, cap. 9, p. 248; Edit. Basel, 1555.

sertion of Galen that the larynx is made up of three cartilages but he asserts that when you take off the membrane of this region you will find there are two arytenoid cartilages, but for the sake of pleasing those who follow the old anatomists in enumerating the cartilages of the larynx as three in number* without describing them, he will consider this as a double cartilage. He defines the glottis as the space between the processus vocales and confines the word epiglottis to its present signification, correcting and criticising the errors and confusion of the prae-Renaissance and mediaeval doctors in this respect, though he shared the error of Galen as did all those who followed him until the nineteenth century in supposing it is the epiglottis which prevents fluids from entering the larynx in large amounts.† It seems singular that Vesalius who dissected the human body should have ascribed to it the muscles elevating the epiglottis in animals‡ while Galen, whom he charges with having only dissected animals, fails to mention these muscles in man, in whom they do not exist. He thus added two muscles to Galen's category of twelve, describing them as almost round, having their origin on the internal surface of the hyoid bone and being inserted at the foot of the operculum or epiglottis. In regard to the uvula and soft palate he does not differ materially from Galen. He repeated the latter's vivisection experiments on the recurrent laryngeal nerve.

Neither he nor Berengar, nor indeed hardly any early anatomist of great note, escaped the charge of human vivisection. With Vesalius, perhaps, this hackneyed accusation gave rise to the story that in expiation of this sin he made the journey to the Holy Sepulchre, dying from shipwreck and disease on the return voyage in 1564. The latter fact seems well established, but whether he had been making an expiatory pilgrimage or not, at least for this purpose, seems very doubtful.§

As has been said, the times furnished a host of anatomists. None, however, surpassed Vesalius, despite his errors, and no anatomical work has ever been published before or since, equalling or even approaching the artistic merits of his magnificent plates, which to be appreciated must be seen in their original reproduc-

Anatomical
Plates of
Vesalius.

* It will be noted that Berengar speaks of the cartilages of the larynx as five in number. He included the epiglottis as we do and made the arytenoids two. Other anatomists, Vesalius among them, speak of the larynx as being made up of three or four cartilages, according as they regarded the arytenoids as single or double. Aristotle had said the epiglottis belongs to the tongue.

† (l. c. Lib. I cap. xxxviii.)

‡ (Lib. II cap. xxi.)

§ Roth: Andreas Vesalius Bruxellensis. 1892.

tions. Indeed, as Roth says: "In the illustrations lies the fiery stimulation and power of his anatomy." Of course as to accuracy there may be much to criticise at present, but even in this they were far in advance of anything hitherto seen. So striking are they, that they were at one time ascribed to the pencil of the immortal Titian, and undoubtedly they resemble the impress of his genius left upon his more authentic productions. The identity of the artist has never been established, a fact in itself suggestive of the unrivalled artistic development of the epoch when Titian (1477-1576) in his long life, or Michael Angelo, who died in the same year as Vesalius, might have traced their outlines. In Grimm's life of Michael Angelo we find it said that Colombo, who was older than Vesalius (1490-1559), made his friend, the great artist, whose passion was anatomy, a present of the body of a young negro for dissection. It was Colombo, who according to Sprengel was the first to give a good description of the ventricles of the larynx. He also experimented on the action of the recurrent nerves. He is said to have antedated Servetus* in the discovery of the pulmonary circulation. Vesalius had made the mistake in the *Epitome of the Fabrica* of describing an internal constrictor muscle of the aperture of the nares, and in this error he was followed many years later by Thomas Bartholinus. Colombo denied this statement and showed that such a muscle did not exist. He in his turn made a mistake in describing the cartilages of the larynx as being of the nature of bone, having apparently noted the ossification frequently found in old people. This was corrected by Laurentius (or Dulaurens)† and Casserius.‡ Colombo speaks of the superior maxillary bone as the *os ampullosum* on account of the sinus.§

Valverde, a Spanish pupil of Colombo, corrected Vesalius' mistake as to the muscles of the epiglottis, although his work is largely a transcription of the great *Fabrica*. Another Spaniard, high in favor with Phillip II, who obtained for him an important appointment in Sicily (1563), was Ingrassias, who was the first to describe the

* "The first description of the pulmonary circulation was published by Servetus in his 'Restitution of Christianity,' 1553, and the same theory was contained in the MSS. copy sent to Calvin at the end of 1545 or beginning of 1546. The reformer refused to return the manuscript and lay in wait for seven years to slay its author" (Whittington). He burned him, but it is only fair to Calvin to say that he made no use of his great discovery.

† "*Historia Anatomica*," 1578 (Trans. by Size p. 1179).

‡ "*De Vocis Auditusque Organis*," 1600.

§ "*In Re Anatomica*." I have derived my extracts from this author, as well as those which follow from Ingrassias and Valverde, second hand from many sources, the originals not being at my disposal. Colombo was the friend, pupil and successor of Vesalius in the chair of Anatomy at Padua, though apparently much older than the latter.

anterior ethmoidal cells and likened the structure of the bone to pumice-stone. (Cloquet.) Colombo and Ingrassias both described the inferior turbinated bones, but Casserius a little later (1610)* described them all, and gave them their present name. There are, he says, hidden in the depths of the nostrils "oblong little bones which may be called spongy, and seem like the steps of a ladder, because one is placed above the other. 'Cuculla,' some call them, I know not through what comparison, unless perchance they wish to liken the two superior to a hood which, however, I would rather compare to the Concha Veneris. Hippocrates not inaptly calls them sleeves. Turbines I would call them from their form and function. They are bones, not cartilages. Turbinated bones (Turbinata Ossa) they are rightly called. They are usually three in number, indeed this many at least always."

The Turbin-
ated Bones.

In the "De Usu Partium"† Galen asserts that the bone in this region would better be called spongy than like a sieve (ethmoid), the term applied to the whole bony structure of the internal nose by Hippocrates‡ but as for the turbinated bones as distinct parts, neither Hippocrates or Galen, so far as I see, betray any knowledge of them. The illustrations Casserius gives of them are very poor. He alludes to the cavities of the turbinated bones, evidently meaning thereby the ethmoid cells. The use of the turbinated bones, he says, is to break the force of the entering air and warm it and cleanse it, which as to the nose, we have found in Galen. Bauhinus (l. c.) refers to these authors and says that the turbinated bones fill the cavity of the nose, and are liable to be eroded in syphilis, and he described the anatomy of this region in animals.

A treatise by Fabricius§ in 1600 contains very good chapters on the structure and functions of the larynx, but in this he was later surpassed by his pupil Casserius.

Anatomy of
the Larynx.

The work of Casserius on the Organs of the Voice and Hearing is a most exhaustive and admirable disquisition on the anatomy and physiology of the larynx and ear, comparative anatomy of the parts being there very fully described and pictured in finely executed plates. He gives an elaborate description of the laryngeal muscles.||

* "Pentæsthesion."

† (Lib. VIII, cap. 7).

‡ (De Locis in Homine) (De Carnis).

§ "De Visione, Voce, Auditu, Tractatus." Fabricius ab Acquapendente.

|| Vesalius, Fallopius, Colombo, Casserius and the other early anatomists had very faulty ideas as to the actions of the intra-laryngeal muscles. Owing to the complexity of their mechanism this is not to be wondered at. Indeed even yet there is much room for difference of opinion and discussion. I would refer the reader to Holmes' History of Laryngology and especially to his treatise on the Voice for a more extensive and accurate description of this difficult matter than I am able to give here.

Fallopian was a man of fine character and great originality of research, to whom medicine owes much. He was the first to separate the glosso-pharyngeal and describe it as an independent nerve, it having been previously, together with the spinal accessory, which Willis subsequently described, considered as a part of the vagus.* He speaks also of the nasal recurrent branch of the fifth pair of nerves. He devotes more attention to the description of the ethmoid bone than does Vesalius. Besides his numerous and valuable observations on the internal ear he describes the lachrymal bones and the lachrymal duct. Fallopian correcting Vesalius declared he was able to find the hyo-epiglottic muscle only in the ox. He gives a tolerably accurate description of the pharyngeal and palatal muscles. While Galen speaks of but one pair of muscles for the palate and fauces, Fallopian differentiates them into three pairs and Bauhinus into four. Vesalius and Colombo had followed Galen in believing the removal of the uvula has an injurious effect on the voice, but Bauhinus† reports a case in which it was entirely removed without causing any inconvenience.

It is to Bauhinus (l. c.) much in the modern nomenclature of anatomy is due, especially as to the muscles. Galen had named the digastric, but in Bauhinus we note the sterno-hyoid, the genio-hyoid, the crico-arytenoideus posticus, etc., etc. He also was very copious in his references to the works of others. He was accused of a lack of originality, but the care he took to quote his authorities, a thing seldom done before him except in the way of criticism, was perhaps partially the cause of this singling him out from others less conscientious. He adds a comment to the statement of Galen, in regard to some of the liquids in the act of swallowing passing into the larynx, which is an indirect criticism of some conceptions which still linger with us. "For certainly unless something flows along the walls of the air tube in affections of the chest, ecclegmata, syrups and tablets are prescribed in vain." Bauhinus' idea of the tonsils was the same as that of the previous writers from whom we have quoted. Even Casserius in describing the pyriform sinuses,‡ which he calls cavernulæ, ascribes to them the function of holding for awhile a certain portion of the liquid on swallowing which by gradually gliding down the walls of the larynx keeps them moist and lubricates them. One must keep in mind the necessity of accounting for the normal moist condition of the mucosa in the absence of any knowledge of the functions of the racemose glands. Laurentius (l. c.) indeed speaks of having occasionally noted glands in the mucosa of the larynx, but their nature was evidently unknown to him and his contemporaries. I have thus far met with no mention of similar structures in the nose.

* *Observationes Anatomicae*. 1561.

† *Theatrum Anatomicum* 1621 III, LXXXIII.

‡ For an extended history of the valliculæ and sinus pyriformes see A. Rosenberg "Arch. f. Laryng." Bd. 10, hft. 3, p. 419.

SOME OF THE BACTERIA FOUND IN THE NOSE.*

BY SAMUEL IGLAUER, B.S., M.D., CINCINNATI, O.

It has long been a disputed question as to whether or not the normal nasal mucus contains bacteria. This is due to the fact that there has been no uniformity in the results obtained by various examiners at different times. Some observers have maintained that the nose always contains bacteria, while others have held that it is a comparatively sterile area.

Upon *à priori* grounds, one would suppose that the nasal mucus swarms with bacteria, for the inspired air contains microorganisms in great numbers. It has been estimated¹ that a person breathing the London atmosphere inspires from 1,500 to 14,000 germs per hour.

In view of the accepted fact that most infections come either through alimentary or the respiratory tract, it is important to determine *what becomes of the inspired bacteria. Where are they arrested? What is their fate?*

It was Lister² who, as early as 1868, established the fact that injuries of the chest, with the escape of blood and air into the pleural sac, would not become empyemata; as long as there was no perforation of the chest wall, and the air which entered the pleural cavity came from the torn lung alone. This he attributed to the filtering action of respiration. By bacteriological methods, others^{3,4} have since shown that trachea and alveoli are usually sterile.

Having thus disposed of the inspired air, we must next consider the expired air.

Tyndall⁵ showed that the expired air was dust-free, and it remained for Straus⁶ to prove that it was germ-free. "On the average," says Straus, "of 609 germs or spores which enter the lungs with the inspired air, one alone comes out with the expired air. 'Hence the frequent failure to find the cause of disease in the exhalations.' " The following observation is unique: "Men or animals confined in a space, far from contaminating the air, tend to purify it, bacteriologically speaking."

To recapitulate: First, we inhale innumerable bacteria; second, the lower air passages and lungs contain few, if any, bacteria;

* Read at the Sixth Annual Meeting of the Western Ophthalmologic and Oto-Laryngologic Association, at Cincinnati, April 11, 1901.

third, the expired air is practically germ-free. From these facts it appears evident that the nasal fossæ and the pharynx must be the depot for the inspired microbes. Let us now see how the more recent researches on this subject agree with this theoretical conclusion. A review of the literature will show that two schools have arisen, the one claiming that the nasal mucus contains numerous and various micro-organisms, the other maintaining that it is comparatively sterile.

In 1889 Wright⁷ removed the nasal secretions with the loop of a long platinum wire from persons as nearly normal as possible. Besides non-pathogenic forms he found the staphylococcus in six of the ten cases he examined.

Von Besser⁸ examined the nasal secretions of fifty-seven men, twenty-eight of whom were convalescents, while the remainder were healthy persons, some of whom worked in a bacteriological laboratory. He found thirteen varieties of organisms, including the

Streptococcus pyog.....	7 times
Mcr. liq. alb.....	22 times
Friedländer's bac. pneum.....	twice.
Staphylococci.....	14 times
The Diplococ. pneum.....	14 times

Paulsen⁹ found numerous microbes in the nose. His procedure was to dilate the nostril, and, after illuminating, to scratch away from the middle and inferior turbinates and the floor of the nose. Eleven of his sixty-four plates remained sterile, nineteen showed ten colonies, the remainder one hundred or more colonies. He found but one pathogenic variety, *i. e.*, one plate showed eighty colonies of streptococci.

Weichselbaum¹⁰ says the pneumococcus is found in the nasal and salivary secretions of many healthy persons. Würtz and Lermoyez¹¹, in 1893, collected mucus by introducing sterile tampons into the nasal cavity. They say that, after rejecting the first few drops, "the nasal mucus, which one has obtained by stimulating a healthy mucus membrane, does not generally contain any microbes." To account for this, they set up the doctrine that mucus has bacterioidal power and experimentally proved this to be true as regards the bac. anthracis. They also made a preliminary statement that upon nearly all pathogenic organisms its action is exerted in the same direction, but in different degrees. Of subsequent observers, but one, Piaget,¹² is inclined to confirm this theory of the bacterioidal power of mucus, while four experimentors,^{13 14 15 16} in as many countries, refute this theory. One¹⁶

goes so far as to show that germs increase in virulence in a mixture of mucus and distilled water, and another¹⁵ was able to grow bacteria in mucus after they had been in it for several days. The work of StClair Thomson and Hewlett,¹⁷ for a time, seemed to settle the question in favor of the sterility of the Schneiderian membrane. Whenever they took their cultures from the vestibule of the nose they obtained abundant colonies. On the other hand, when they inoculated their plates (agar) from the Schneiderian membrane, removing the mucus, with great care not to touch the vibrissæ or the vestibule, they found eighty-four per cent to remain sterile. They suggest that previous observers, who did not avoid the vestibule in taking their cultures, may have obtained positive results by contamination from this source.

Acting upon this suggestion, Park and Wright¹⁴ repeated the work done by the latter in 1889, and found thirty, out of thirty-six, plates positive for bacteria.

Klemperer,¹⁸ in Germany, also made the statement that the nasal cavity always contains bacteria, and refutes the work of Thomson and Hewlett.

In Italy three observers^{16 18} not only find organisms, but classify them, and find numerous pathogenic as well as non-pathogenic forms.

Fränkel,¹⁹ exploring the antrum of Highmore in twenty-eight cadavers, with normal sinuses, found thirteen to be sterile. In the inhabited cavities he found one or more of the following varieties:

Diplococc. lanc.,

Staph. pyog. flav.,

A diphtheria-like germ.

Bac. mucos. capsulatus.

Bact. coli; and

An anthrax-like germ (non-path.)

He concludes that a large number of healthy sinuses contain micro-organisms which play an important role in the disease.

I now wish to give the results of my own observations made in the year 1900 in the Pathological Institute in Vienna, with the encouragement and under the guidance of Docent M. Gohn and with the approval of Prof. Weichselbaum.

The prime object of this work was to search for the diplococcus intracellularis meningitidis and for the influenza bacillus in the cadavers of persons who had not had either disease. Thirty-four cadavers were examined. The bodies had previously been kept

TABLE I.
CULTURES.

Case No.	Age.	CAUSE OF DEATH.	Hours after Death.	VARIOUS FORMS IN SMEAR PREPARATION. GRAM METHOD.		Staphylococcus Pyog. Aur.*	Staph. Pyog. Alb.*	Coli Group.	Diplococ. Pneumon.*	Streptococci.*	Pseudo Diph Group.	Bac. Pyocyaneus.	Capsul. Bac. Group.	Bac. Influenza.	Subtilis Group.	Yeast.	Varieties of Unidentified Colonies.
				Cocci.	Bacilli.												
1	49 yrs.	Embolism Ar. Pulm.	23	0	0	a.	s.	s.		v. a.	a. f.						1 cocci
2	87 yrs.	Prog. Paralysis	8½	2		s.				a.	a. f.						2 cocci bac.
3	37 yrs.	Nitral Lesion, Gastro-Enteritis, Peritonitis	26½	1	2												
4	73 yrs.	Senility, Decubitus, etc.	14		3	r. a.		v. a.		s.							
5	67 yrs.	Ruptured Aneurism Aortæ	24(1)	0	2			a. f.									
6	53 yrs.	Thyroid Tumor, Tracheotomy, Pneumonia	5½	3	2			a. f.									
7	37 yrs.	Gloma Brain (Bronchitis)		2	1			r. a.		a.				s.			1 bac.
8	51 yrs.	Sarcoma-Humeri, Extirpation (Emphysema)	16½	3	1	v. a.											1 coli (?)
9	57 yrs.	Frc. Bas. Cran. Cron., Hyd'ceph. & Chron. Lep'ingitis		0	0	a.											
10	2 mo.		4 to 8	3	2	a. f.											1 (bac.)
11	63 yrs.	Carc. Cordiaæ		2	2												
12	69 yrs.	Carc. Rectum (Emphysema)	8½														1 cocci
13	75 yrs.	Contusion of Spine		1	1	r. a.											1 bacilli
14	35 yrs.	Fractures	23½	2	2												
15	1 mo.	Chr. Enteritis, Bronchitis		2	1	s.				r. a.					s.		
16	1 mo.	Catarth of Bowels, Inanition		2	3												
17	49 yrs.	Carc. Bladder, Emphysema		0	0	a.											
18	43 yrs.	Dementia Paralytica	25	1	1												
19	40 yrs.	Prog. Paral.	10½			a. f.											
20	37 yrs.	Epilepsy	23½			a. f.											
				23	22	11	6	8	8	6	3	2	1	1	1	1	8

Explanation of Abbreviations: a., abundant; r. a., rather abundant; v. a., very abundant; a. f., a few; s., several.

* The identification of these forms was only partial and therefore is not positive.

TABLE II.

Case No.	Age	PULMONIC CONDITION. (Usually a Complicating Condition.)	Hours after Death.	VARIOUS FORMS IN SMEAR PREPARATION.		Staph. Pyog. Aureus.*	Staph. Pyog. Alb.*	Coli Group.	Diplococcus Pneumonia.*	Streptococci.	Pseudo Diphtheria Group.	Capsul. Bacillus Group.	Varieties of Colonies Unidentified.
				Cocci.	Bacilli.								
1	55	Pneumonia	17	3	2	v. a.	r. a.	r. a.	a. f.	a. f.	a.		2
2	27	Pneumonia	10	1	1	v. a.	r. a.	r. a.	a. f.	a. f.			
3	49	Tuberculosis	25	1	1			s.		v. a.			1
4	52	Pneumonia	29½										1
5	23	Tuberculosis	5½	1	2	v. a.	s.		a.				1
6	48	Tuberculosis	6½	1	2	a. f.	a. f.		v. a.				
7	45	Tuberculosis	10	2	2		s.		r. a.				
8	33	Tuberculosis	24	1	1								
9	61	Anthracosis	23½	1	2	a. f.	a. f.	a.	a.	a. f.			
10	47	Pneumonia	93½	1	1		r. a.		v. a.	a. f.	a. f.		1
11	67	Pneumonia	21¾	1	3	a.	v. a.	s.	a. f.	s.			1
12	22	Tuberculosis	24½	1	1								1
13	51	Pneumonia	24½	1	3	s.							1
14	50	Tuberculosis	29	1	1	r. a.	r. a.					r. a.	1
				16	19								8

Explanation of Abbreviations: v. a., very abundant; a. f., a few; s., several; r. a., rather abundant; a., abundant.

* The identification of these forms was only partial and therefore is not positive.

in the cold cellar prior to the examination. The examination was made as soon after death as possible. After the brain had been removed in the usual manner a transverse cut was made through the base of the skull in such a way that it extended into the pharynx and exposed the posterior nares.

A sterile platinum loop was then introduced into the posterior nares, and with it mucus was removed from the nose. The first drop was used for smear preparations. The loop was re-introduced from one to three times, and the mucus thus collected was mixed with a few c.c. of sterile bouillon. From this bouillon mixture three plates were immediately inoculated, *i. e.*, one agar plate, one serum-agar plate and one blood-agar plate.

The smear preparation was stained according to Gram and examined for bacteria.

After twenty-four to forty-eight hours the plates were removed from the incubator and the colonies identified as nearly as possible. These observations differ from those previously quoted in that the cultures were taken from the posterior nares of the cadaver. Appended is a table showing the findings in twenty selected cases:

A summary shows that the staphylococcus pyog. aur. was present in eleven of the twenty cases, the styph. pyog. alb. in six of the cases, the diplococcus pneumonia (Fränkel-Werchselbaum) and the Coli group were each represented eight times; the streptococcus pyog. in six of the cases; pseudodiphtheria group, three times. The influen^{za} bacillus, the subtilis and the B. capsulatus group and the yeast plant were each found in one of the cases. The bacillus pyocyaneus was found in two of the cases. Besides these, eight unidentified forms were noted. Thus a total of nineteen varieties was found.

No experiments were made as to pathogenicity for animals. (Note the * starred varieties in the table.)

The additional fourteen cases of the thirty-four showed some marked pulmonic lesion, and hence are given in a separate table. (The pulmonic condition was not the cause of death in most of these cases.)

My findings agree closely with those of Von Besser,⁸ Malato¹⁶ and Wright⁷ on the living subject, and with Fränkel's¹⁹ results on the normal antrum in the cadaver. The fact that Fränkel found the antrum sterile in a number of cases (thirteen out of twenty-eight) may be explained by the slow diffusion of the air through its small ostium.

Another method of investigating this problem has been by killing animals and examining their nasal fossæ immediately after death. Working according to this method, Hildebrant³ found abundant microbes; Piaget found fifteen out of thirty-eight cavities sterile¹²; Fermi¹⁸ found a scant development of microbes and now and then a sterile plate; while Park and Wright¹⁴ found (in two cases) numerous colonies. It will be seen that a majority obtained positive results.

In order to reconcile these varying observations in the endeavor to reach a definite conclusion, a brief review must be made.

In 1895, the English observers, Thomson and Hewlett,¹⁷ made their oft-quoted statement, that the Schneiderian membrane was usually sterile, and that the vestibule was always infected; and suggested that those observers who had positive results may have removed some organisms from the vestibule in taking their cultures. Working in the full light of this objection, Park and Wright¹⁴ have come to the conclusion that the nasal mucus usually, and Klemperer¹⁵ that it always contains microbes. Two Italian experimenters,¹⁸ familiar with the Englishmen's work, nearly always found the human nasal fossæ inhabited.

In addition to this, Malato¹⁶ and Jones²⁰ have each removed with the mucus, organisms pathogenic for animals, and the writer has found the posterior nares of cadavers are always positive. Piaget¹² alone, has upheld the sterility theory. The experiments upon animals have often shown bacteria.

The positive findings overwhelm the negative results; the weight of evidence is *strongly to the effect that the normal nasal mucus contains bacteria*. However, the flora of the nose can not be as abundant, as we would suppose from the number of bacteria inspired; for the following reasons:

1. The surface over which the bacteria are scattered is rather large. From measurements I have made I find it to be about 154 sq. cm. in the nose, and 25 sq. cm. in the naso-pharynx.

2. A certain number of bacteria must reach the naso-pharynx from which they are swallowed and digested.

3. [The flow of mucus and serum, together with gravity tends to carry away the germs.] P. and W.¹⁴

4. [The nasal mucus is not a good culture medium.] P. and W.¹⁴

5. and most important. The organisms which have lodged in the nose are expelled by the ciliated epithelium with great rapidity, ¹⁴ etc. This action has been measured in the frog as at the rate of one inch per minute.¹

6. A recent work¹⁶ seems to show that the nasal epithelium has bacteriacidal power.

The practical conclusions to be drawn are:

1. It is advisable to sterilize the vestibule of the nose before operating.

2. After operations the nostril on the operated side should be closed with a piece of cotton to act as a filter.

3. Plugging of the nasal cavity after operations is, as a rule, inadvisable, as it tends to retain the nasal secretions.

4. Nasal wounds do not heal by first intention, owing to the presence of bacteria. This also explains the occurrence of secondary hemorrhage.

5. Fever after operations^{21 22} and the few deaths²³ recorded, have probably been due to the presence of pathogenic micro-organisms in the nose.

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EDEMA OF THE LARYNX.*

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It is my intention in this paper to refer more particularly to those cases which have either some insignificant or undiscoverable origin.

It is quite possible to have laryngeal edema from any cause, however slight, capable of producing local irritation. Moritz Schmidt¹ has mentioned perhaps the simplest of all, an injury from a hard crust of bread, a circumstance which might easily be forgotten.

Among the more common causes may be mentioned traumatism, foreign bodies, irritating vapors and corrosive poisons, or we may have secondary edema in syphilis, tuberculosis, diphtheritic infection, or any disease of the larynx.

Angio-neurotic edema is an affection which manifests itself externally, but may invade the larynx. It is of an hereditary character, and seen in neurotic individuals.

Laryngeal edema is called typical when it occurs primarily in the larynx, consecutive when it is preceded by some other laryngeal affection, and contiguous when it extends from an adjacent part.

The term passive edema has been applied to those cases in which the laryngeal swelling is simply a part of a general anasarca.

There have been many writers upon this subject, perhaps the most prominent being Sestier², whose writings in 1852 have been extensively quoted.

The most recent observer to tabulate cases is Dr. C. C. Rice,³ who included all cases reported in ten years from 1887.

Since that time cases have been reported from various causes, as Anesthesia by England⁴, Angio-neurotic by Damieno⁵, Urticaria by Taylor⁶, Climacteric by Uchermann⁷ and Catarrhal by Clark⁸.

There are many opinions in regard to primary edema of the larynx, no less an authority than Mackenzie⁹ being responsible for the statement that he believes "in nearly all the instances of so-called simple inflammations, the disease is due to blood poisoning, and in every case seen by him an opportunity for infection had been present." Dr. Rice¹⁰ remarks that although the cause of many of the cases classified is given as catarrhal, he believes it to be quite possible that diphtheritic infection has not been satisfactorily excluded, nor the heart and kidneys examined.

* Read before the Bridgeport Medical Association, June 4, 1901.

Rosenberg¹¹ credits Peltesohn with the opinion that an edema secondary to an inflammation more deeply situated may mask the primary condition:

There is without doubt a cause for all cases of edema of the larynx, as is true of all other affections, the terms primary and idiopathic being applied to those cases where the cause is undiscernable.

I think Lennox Browne¹² in his excellent chapter on the subject aptly states the case when he says: "It cannot be denied, however, that acute edematous laryngitis frequently occurs as an apparently primary affection."

The diagnosis of the disease is not difficult, and is always to be suspected in a sudden obstruction to the respiratory functions, especially in an adult. The patient appears anxious, restless and possibly cyanotic. The voice may be much affected and deglutition very painful. The local appearances are characteristic, the globular semi-translucent swellings on the lingual surface of the epiglottis, the ary-epiglottic folds, or ventricular bands, cannot be mistaken.

Bosworth¹³ describes the course of the disease as follows: "The tumefaction of the ary-epiglottic folds extends downward to and involves the ventricular bands, the membrane covering the arytenoid cartilages and the commissure, while in front the edema, starting on the posterior aspect of the epiglottis, mounts to the epiglottic crest and passes over, and is liable to extend as far as the glosso-epiglottic fossæ."

Hajek, of Vienna, on the contrary, teaches in his clinic, that, owing to the intimate relation between the mucous membrane and cartilage, and the entire absence of sub-mucous tissue on the posterior surface of the epiglottis, edema in that location is impossible, and bases his opinion upon attempts to artificially produce the affection in anatomical preparations, by sub-mucous injections. He also shows the presence of definite natural limitations, which offer a greater or less resistance to the extension of edema in the larynx.

The following case which came under my care has many points of interest. N. G., Hebrew, pawnbroker by occupation, forty-four years of age, weighing 162 pounds, came to me early on May 25, 1900, complaining of pain in his throat. He was a moderate smoker, temperate in regard to alcoholics, and had a negative personal and family history. On examination there seemed a marked discrepancy between the objective and subjective symptoms, for beyond a slight catarrhal pharyngitis and laryngitis, nothing was found to account for the symptoms which seemed to depend largely upon the

well-known susceptibility of the race to anxiety in sickness and a possible rheumatic element. Sodium salicylate was given with the assurance of an early recovery. On the following day I was called to his home and was struck by his changed appearance, his breathing being noisy and disturbed, his voice very difficult to understand and great pain manifested on swallowing. An external examination revealed nothing more than some tenderness over the region of the larynx, but internally both arytenoid cartilages and ventricular bands were represented by large edematous swellings, the epiglottis being unaffected. The vocal cords were barely visible through the small opening into the larynx and seemed to move freely. The usual remedies were employed, including ice and pilocarpine, but to no purpose, the swelling increasing until a few hours later a view into the larynx was impossible, and respiration greatly impeded.

Free scarification of the swellings was practiced with considerable relief, but on May 30th, five days later, tracheotomy was required. The operation was made necessary by a fixation of the cords in the adducted position rather than an increase of the swelling. This fixation is due according to Lennox Browne¹⁴ to a paralysis of the posterior crico-arytenoid muscles from serous infiltration. The tube was removed on the sixth day, after which the patient made an uninterrupted recovery. There still persists, a year later, a fixation of the right cord in a position a little to the right of the median line, but the defect is remedied by the free movements of the left cord, only a slight occasional huskiness remaining. The patient's physical condition is, as before the illness, all that can be desired.

In regard to the treatment, it may be interesting to note that suprarenal extract was tried with no appreciable effect. It has been recently highly recommended by Somers¹⁵ who reports a case of edema of the larynx as undoubtedly cured by it, and by Bates¹⁶, who mentioned several such apparent cures. I can hardly see why suprarenal extract should reduce an edema, but should expect it rather to hinder absorption from the sub-mucous tissues. Somers¹⁷ himself in another article says: "It prevents to a marked extent the toxic effect of local anesthetics by retaining them in the tissues and preventing absorption."

Scarification, in the experience of Shurly¹⁸, has never been attended with good results. It is recommended by most writers, however, and seemed to be the only treatment employed in this case with benefit.

Although I have never seen it so stated, I cannot but believe that a perichondritis might accidentally be excited by its employment.

Having treated this patient a month previous to his illness for a slight ear trouble, I had ample opportunity to know that he was free from chronic disease of the larynx. The ear affection was non-suppurative and offered no opportunity for infection. The heart and kidneys were examined and found normal. There was at no time any evidence of diphtheritic infection, and practically no constitutional symptoms until the first few days following the tracheotomy.

Moritz Schmidt¹⁹ believes potassium iodide to be responsible for many cases of edema of the larynx, and states that small doses seem more liable to cause the disease than large, the symptoms subsiding rapidly on the discontinuance of the remedy.

This patient had taken ten grains daily in divided doses, but as the remedy had been discontinued several days before the illness, it could not have been a cause, even were it possible to produce such dire results, with so small a dose.

While the extreme rarity of an edema of the larynx due to catarrhal conditions cannot be denied, in the absence of a more definite cause, I accept as the etiological factor in this case a simple acute laryngitis.

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IODATED MILK (SCLAVO) IN RHINO-LARYNGEAL THERAPEUTICS.

BY PROF. GHERARDO FERARRI, ROME, ITALY.

In persons suffering from reflex symptoms of nasal origin, particularly asthma, it is known by all that iodine preparations, and especially iodide of potassium, in high doses, does much to alleviate and retard the attacks and sometimes make them cease entirely. It is equally true that the retained characteristic odor of atrophic rhinitis (ozena) may be modified or diminished in intensity by the administration of sufficiently high doses of iodide of potassium, in such a manner as to saturate the organism and produce the fetid iodic coryza.

For this reason the proposition of Sclavo to use in these cases subcutaneous injections of iodated milk in preference to the treatment pursued by the way of the digestive tract was favorably received. With a Roux syringe used for two days in all rhinitis accompanied either by ozena or reflex nervous disturbances, a subcutaneous injection, on the abdomen or over the scapula, of 10 c. c. of iodated milk containing 0.05 gram. of iodine prepared by Prof. Sclavo at his institute of experimental hygiene of the Royal University of Siene. The treatment is very well borne, without any local reaction, the patients merely stating that for a minute or two after an injection they have a strong taste of iodine in the mouth.

In my practice I have observed the effect, after ten to twenty injections, of completely preventing the attacks of reflex asthma of nasal origin and of causing a diminution, in a most marked manner, of the retained odor of atrophic rhinitis, which intensity does not manifest itself under intense injections in the entire Schneiderian mucosa, thus leading to a better chance of treating locally.

The satisfaction obtained by the good effects in atrophic and vasomotor rhinitis with the hypodermic injections of iodated milk led to the conclusion that it would not be a matter of experiment in other lesions of the upper part of the air passages, especially of the larynx, in which local treatment cannot be entirely sufficient to repair the total loss of substance to modify deeply textures to favor resorption of exudates. Upon this vital point I wished to submit to the injections of iodated milk a patient affected for a long time with a rheumatic (a fijore) left crico-aretynoid synovitis or arthritis.

In this case a laryngoscopic examination showed a voluminous edema of the left aretynoid mucosa, which occupied the entire opening of the larynx.

The mucous membrane so markedly smooth, but of a sub-cyanotic color, presented a certain degree of hardness and rigidity to pressure with a probe. The left half of the larynx remained perfectly immobile in movements of respiration or phonation. The marked symptoms of the patient were accentuated in phonation and in sudden coughing, when he wished to raise his voice or breathe a little in a hurry, or swallow liquids before he thought.

Well, the iodated milk at the fifth injection already revived as well as reduced by half the inflammatory tumefaction, in the left crico-aretynoid articulation, being rid of which there remained anew the entire right half of the larynx, appearing perfectly healthy, as also the anterior third of the right vocal cord. After ten injections the edema was reduced to a minimum size and a marked rigidity of the crico-aretynoid articulation alone persisted. The patient was then advised to complete his second course of treatment at Salsomaggiore.

The method of Sclavo is similar to that of Durante, in so much so that it will give rise to the question as to which is the prior one. Now, in my opinion, iodated milk, from a practical point of view, has in its favor the production of less pain from injections than produced by other methods, and the same of Durante is a noteworthy advantage.

When the iodine enters into combination with a molecule of caseine, as shown by the comparative proofs of Sclavo, assisting at a distance when it is distributed to other parts, since guaiacol has been adopted as a common thing for a solvent to eliminate iodine, not by limiting its action as a dermal eliminant, but by forming a true and proper combination.

There are clinical results which should decide whether the organism derives the advantage from albuminoid iodine or from the iodine which forms a part of the less complicated molecule of the aromatic series.

The preparation of Sclavo acts like the iodine injected by the method of Durante, since that element in contact with the tissues produces immediately a combination forming an iodated albumin. Durante, when he first wrote, joyfully spoke of the bactericidal property of this iodine, but later ceased to invoke this action because iodine could not act as a disinfectant of the surface, attributing it to too great an energy with albumin when it forms a body absolutely inactive upon germs. The action of iodated milk and of iodine, after Durante and according to Sclavo, acts indirectly upon micro-organisms and directly in improving the material change.

When we examine the administration of iodated milk by the mouth, the experiment of Sclavo, made upon himself, demonstrated that the preparation is changed in the intestine with the formation of an alkaline iodide which is absorbed as soon as in two or three hours, and there is the iodine reaction in the urine, a reaction which appears somewhat later when the remedy is introduced subcutaneously.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

SEVENTH ANNUAL MEETING.

Held in New York, May 23, 24, and 25, 1901.

(Continued from page 309.)

Some Observations Upon the Diagnosis and Treatment of Specific Disease of the Naso-Pharynx.

DR. P. S. DONELLAN, of Philadelphia, read this paper. He said that he had recently seen a case of chancre on the posterior arch of the palate, the diagnosis being evident from the appearance, and being confirmed by the subsequent course of the disease. There was nothing in the history to point to the manner in which infection had taken place. Ulcerations of the pharynx were common, and were associated with painful deglutition and obstruction of respiration, and the usual symptoms of "catarrh," the diagnosis usually made by the general practitioner after a superficial examination. He had been impressed with the importance of making a routine thorough examination of the naso-pharynx with the aid of White's palate retractor. A bacteriological examination of the secretions of the lesion, and anti-syphilitic treatment would usually enable one to make the differential diagnosis between tuberculosis, syphilis and diphtheria in obscure cases. Local and systemic anti-syphilitic treatment were called for in syphilitic disease of the naso-pharynx. He was personally in favor of the hypodermic method, using bichloride of mercury in doses of $\frac{1}{16}$ to $\frac{1}{4}$ of a grain. The injections are usually given deeply into the muscles of the lumbar region. He gave the mercurial as long as the disease showed activity, and then interruptedly for two years. The alkaline douche and black wash should be used locally. Where there was much dysphagia, orthoform sometimes proved useful.

DR. GEORGE L. RICHARDS, of Fall River, advised that a thorough trial of anti-syphilitic treatment should be given in cases in which a diagnosis of syphilis had been made before resorting to any surgical interference, for, the chances were that such interference would then be found unnecessary.

DR. L. A. COFFIN, of New York City, referred briefly to two desperate cases of syphilis of the pharynx.

DR. CHARLES F. MCGAHAN, of Aiken, S. C., said that in his experience most of the cases of tuberculosis of the throat are secondary, and he believed that the same was true of tuberculosis of the nose.

DR. PRICE BROWN, of Toronto, said that a gentleman had been referred to him by an oculist, some six months ago, for nasal treatment, with the statement that the man had specific keratitis, and had been receiving anti-syphilitic treatment. Examination of the nose showed that the trouble there was traumatic, not syphilitic. He subsequently returned with a perforation of the soft palate, evidently the result of the formation and breaking down of a gamona. The history showed that he had become syphilitic ten years before, but after having been treated for a time had married. Both children were healthy, and the wife was said to be healthy. Under anti-syphilitic treatment the condition of the palate had been kept in check.

An Operation for Prominence of the Auricle.

DR. THOMAS R. POOLEY, of New York City, read a paper on this subject. The patient was an actress, twenty-eight years of age, and the operation had been done on both ears at an interval of a few days, following closely the method of Dr. Edward T. Ely. An incision was made through the skin along the entire length of the furrow formed by the junction of the auricle with the side of the head. This was joined at each end by a curved incision, and the skin dissected off. An elliptical piece of the cartilage, $\frac{1}{8}$ by $\frac{1}{3}$ of an inch, was removed. The wound was united by seven interrupted sutures of black silk, four passing through the skin only, and the other three through both skin and cartilage. The operation was done under local cocaine anesthesia under strict asepsis. The wound behind the ear healed by first intention, and that in front by granulation. The first operation had been done on August 6, 1900, and the patient was well satisfied with the result, and he had been pleased with the method of operating.

DR. M. D. LEDERMAN, of New York City, reported two cases upon which he had operated. One was a large sebaceous cyst in which after the removal of the cyst the auricle had been bent over on the external canal. He had accordingly made a V-shaped incision over the mastoid, and removed a portion of skin. Primary union had taken place. The other case was in a negro who had a keloid growth on the lobe of the ear.

DR. T. PASSMORE BERENS, of New York City, spoke of a case in which the protrusion of the ear was caused by an excess of cartilage of the concha. In that case he had excised a piece of cartilage nearly half an inch in its broadest part. The wound was closed simply by a buried suture, and was dressed with collodian, binding the auricle to the side of the head by a gauze bandage. At the end of the fifth day the wound had healed, but the bandage was worn for eight days longer, and by that time the ends of the cartilage had united. The operation had been done two months ago, and at the present time the extra fold of skin left after the operation had nearly disappeared. He was opposed to making an anterior as well as a posterior incision.

DR. J. F. MCKERNON, of New York City, said that he had seen a very similar operation done ten years ago by Dr. George Abbott, of this city, except that three sections of the cartilage had been taken out without affecting the skin anteriorly at all. The result had been very good. Within the last three years he had seen another case also yielding a good result.

DR. POOLEY said that he felt sure that any operation which did not involve a considerable dissection of the cartilage would not succeed, but whether one should go through the entire concha or not was a question.

Clinical Notes on Adrenalin.

DR. NORTON L. WILSON, of Elizabeth, N. J. This paper appeared in full in the August issue of THE LARYNGOSCOPE. Page 63.

DR. J. A. STUCKY, of Lexington, Ky., said that he had used adrenalin extensively in nose and throat work since last November. He had found that it did produce some anesthesia. When used with cocaine less of the latter was required, and the anesthesia lasted longer. He had found it particularly valuable in middle-ear operations. He did not believe there was any more hemorrhage after its use than after operations in which it was not used, except, perhaps, where there was a great deal of spongy tissue. He rarely used a solution stronger than one to three or five thousand; in subacute laryngitis he employed a solution of the strength of one to ten thousand. An especially useful combination was with resorcin. He had also found it a very valuable remedy to combat the shock following anesthesia from chloroform or ether. In one case of this kind, occurring after chloroform, he had poured about half a drachm of a one to five thousand solution on the tongue, and very quickly the heart action had been revived.

DR. T. PASSMORE BERENS, of New York City, said that he had been using adrenalin for about six months, and had found that it kept well in his office. He had purposely left one vial uncorked for six weeks, and had found it perfectly sweet and effective at the end of that time. It would blanch and clear up the Eustachian tube in those cases of acute middle-ear catarrh of tubal origin. It had been his practice to inject through the catheter into the tube from three to five drops of the one to one thousand solution, and then with a Politzer bag to blow it into the Eustachian tube. This would keep the tube open for a sufficient length of time to give the patient a good deal of comfort by allowing drainage through the tube. He had also used it hypodermically in two cutaneous operations about the face, and with good result, and also injected it beneath the mucous membrane of the cheek in opening the antrum of Highmore. Here it had answered well in preventing hemorrhage.

DR. M. D. LEDERMAN, of New York City, thought the drug was especially valuable in lessening the absorption of cocaine, and hence, preventing the occurrence of cocaine toxæmia. Such cases were not nearly so frequent since adrenalin had been in general use. In a case of nasal hydrorrhea the local effect of the remedy had been shown when given by the stomach in conjunction with the local treatment. As it was an animal extract, he favored combining it with some cardiac stimulant to guard against the occurrence of cardiac weakness, when given internally, though it increases blood pressure.

DR. OTTO J. STEIN, of Chicago, said that he had recently used this remedy in a case of antrum disease, expecting to have a bloodless field, yet he had had about as much hemorrhage with a one to one thousand solution as if he had not used it. He had employed it in another case in which he had entered the maxillary sinus, and the hemorrhage had been just as profuse as if it had not been used. He had commonly employed adrenalin in the strength of one to three thousand, though sometimes in stronger solution, and he had kept it in contact with the tissues for ten or fifteen minutes.

DR. TALBOT R. CHAMBERS, of Jersey City, N. J., said that he had done the Gleason operation on the nasal septum a good many times, and had not observed the loss of over five or ten drops of blood from cutting the septum if adrenalin had been used. His method was to inject a few drops of adrenalin (one to one thousand with five per cent solution of cocaine) underneath the mucosa, and then the syringe was withdrawn and a few more drops injected.

Finally, a few drops were injected under the mucosa near the anterior nares. Just before operating, some cotton with twenty per cent cocaine is wiped over the hollow of the septum. There was no bleeding after cutting the septum under these circumstances. In one case in which he had done a secondary mastoid operation for purulent otitis media, a cholesteotoma had been found. It would have been almost impossible to have enucleated this entire without the use of the adrenalin, yet with the latter this operation had been performed with perfect success.

DR. H. HOLBROOK CURTIS, of New York City, said that while he thought the discovery by Dr. W. H. Bates of the suprarenal extract ranked with that by Dr. Carl Koller of cocaine, he had come to the conclusion that there were cases in which because of idiosyncrasy it acted very badly. He had had eight or ten cases in which there had been an absolute intolerance of adrenalin and of any of the preparations of the suprarenal gland. In one of the first of these cases a gentleman sneezed for two hours and a half after having used the suprarenal extract, and then on his return cocaine had been used and had given immediate relief. The sneezing had, however, returned in the evening, and had lasted for hours. He had had hay fever patients, after using suprarenal extract for a few days, suffer from violent pain in the upper part of the nose, necessitating the discontinuance of the remedy. Last fall he had himself used the adrenalin spray for a few days, and then a terrible coryza had set in and had resulted in a genuine hay fever, which had only ceased on the discontinuance of the adrenalin. He had done over 100 septum operations, and when used with cocaine he had yet to see any untoward symptoms. He would like to know if intense pain or sneezing or violent coryza had been noted by others after the use of this substance.

DR. EDWARD B. DENCH, of New York City, said that he had not used the adrenalin, but had employed suprarenal extract. In all of his cases the effect had been entirely satisfactory as far as the control of hemorrhage was concerned. In one case, where owing to the age of the patient he had avoided general anesthesia, he had done an Asch operation with the aid of cocaine and suprarenal extract, and there had been practically no loss of blood. This had been his experience in many other cases. In middle-ear work he had found suprarenal extract of great value. His method of using it was to saturate a small strip of gauze with the sterilized solution of suprarenal extract, and pack this through the speculum down upon the bleeding point. If left there for about a minute

and a half it would be found that the field was practically dry.

DR. S. MACCUEEN SMITH, of Philadelphia, said that he had found the drug of special value in cases in which it was used with cocaine to prevent cocaine poisoning. He was accustomed to apply a twenty per cent solution of cocaine, but he never sprayed it into the nostril, but simply made a local application of this solution. Up to the present time he had had no trouble with cocaine alone.

DR. WALTER B. JOHNSON, of Paterson, said that it was important that the field be made thoroughly clean before the application of the adrenalin. He could not see that there was any difference in the action of suprarenal extract and adrenalin, though on the score of convenience adrenalin was greatly to be preferred. He had not met with any idiosyncrasies, all of the cases in which he had used it having been very satisfactory. The effect of the adrenalin on the lymph channels of the eye was very important.

DR. MAX A. GOLDSTEIN, of St. Louis, said that occasionally a very acute irritation and active, continued sneezing was produced by spraying even a weak solution of the drug on the mucosa. He would like to suggest to Dr. Takamini that this might be overcome by dissolving the adrenalin in an oil instead of using an aqueous vehicle. A 1 to 1,000 solution would be found useful in cases of acute laryngitis, especially the laryngitis of singers. If a solution of this strength were sprayed upon the larynx just before singing the result would be most gratifying.

DR. L. L. MIAL, of New York City, said that he had used the suprarenal extract in the nose in two cases in which it had produced violent sneezing, lasting ten to twelve hours. The solution of adrenalin with chloretone was distinctly anesthetic and did not produce this sneezing. He had used this combination in removing spurs from the septum and chelazion from the eyelids. It caused slight smarting for a few seconds, but was very soothing after the application of sulphate of copper in cases of trachoma.

DR. M. R. WARD, of Pittsburg, said that he had had some adverse results, but had not attributed them to the drug used, but rather to a defective technique. He had met with some irritating effects from the remedy, but had never seen any hemorrhage after its use. In some plastic operations on the septum he had had some difficulty in the way of sloughing. Whether this was due to lack of cleanliness or to the disturbance of nutrition produced by the drug he was unable to say.

DR. R. C. MYLES, of New York City, said that he had been particularly fortunate in the use of the powdered suprarenal extract during the past few years. In the last few months he had unfortunate results with the aqueous solution with resorcin, and had three patients leave him because of this. In one case he had used in the nose a ten per cent aqueous solution of suprarenal extract containing two per cent of resorcin. It had caused very troublesome sneezing and then the patient had disappeared. In another case the sneezing had lasted all night and all the next day. All these unfavorable results had occurred in connection with the use of the aqueous solution of suprarenal extract, never with the powdered extract. The solution had been boiled each time.

DR. PRICE BROWN said that he had not used the extract for about one year because he had met so frequently with irritation. He intended to try adrenalin.

DR. CHARLES W. RICHARDSON, of Washington, D. C., thought that all must have noticed certain constitutional effects, such as attacks of vertigo, with nausea and headache, resulting from internal administration of the drug.

DR. JOHICHI TAKAMINI, of New York City, was invited to take part in the discussion. He said that his work had consisted simply in the isolation of the active principle of the suprarenal gland. He had been the first one to isolate this active principle in the chemically pure crystalline form, and he looked upon this feat as only the beginning of great progress in organotherapy. It was probable that the active principle of many other glands would be similarly isolated in the near future. The very fact of adrenalin being crystallin was Nature's certificate that it was a definite chemical substance. It was not his province to determine the best dose or strength in which it should be used. Chemically, the adrenalin was a very mild alkali, the alkalinity of which had been just neutralized. He could not, therefore, understand why it should produce such irritation as had been described by some of the speakers. Dr. E. Fletcher Ingalls, of Chicago, was one of those who had complained to him of the irritation produced by adrenalin, but from a published article by Dr. Ingalls he had learned that this physician had been in the habit of dipping his instruments into a formalin solution. This, of course, would readily explain the irritation observed. It was well known that distilled water produces a good deal of irritation in the eye, and also in the nose, and hence the solution should be made slightly alkaline. The ordinary suprarenal extract contained considerable

mineral matter, and its solution was therefore similar to normal salt solution. He had tried the plan of dissolving adrenalin in oil, but had found it practically insoluble. He had, however, succeeded in making an oleate of adrenalin, but the moment this is sprayed it is liable to oxidize and to become quickly inert. It might be possible by the use of a device which would expose only five or ten drops to the air to make use of this oleate and so overcome the objection just mentioned.

DR. WILSON, in closing the discussion, said that he had observed none of the cases of irritation. He had seen irritation from the watery extract of the suprarenal extract, and yet in the same patient adrenalin had not produced this irritation. He had never succeeded in obtaining as active a preparation of the suprarenal extract after sterilizing it by heat. Such deterioration he had not observed with adrenalin, which could be sterilized repeatedly without lessening its efficiency. He had never observed sloughs after the use of adrenalin, though he had used this drug for two days after operation. He was inclined to think that some physicians used it too strong; one to five or ten thousand was strong enough for ordinary cases.

Empyema of the Right Maxillary, Ethmoidal and Sphenoidal Sinuses, with Subsequent Blindness of the Left Eye; Operation and Recovery of Sight.

DR. T. H. HALSTED, of Syracuse, N. Y., reported this case, and called attention to the frequent anatomical variations in the structure of the sinuses. In the past year many cases had been reported showing the relation of sinus disease as a cause, and eye lesion as a result. The case reported was that of a woman of forty-five, who, on awakening, had found herself totally blind in the left eye. Examination showed swelling of the sheath of the left optic nerve, enlarged and tortuous veins and quantitative perception of light only. For about two years she had had some nasal catarrh, and some months previously had had an acute exacerbation characterized by a constant and free discharge of odorous pus. This pus had been discharged only from the right side. On examination he had found the left side clear. There was pus coming from under the right middle turbinate. Under transillumination the right maxillary sinus was completely dark, and both frontal sinuses were very translucent. The left pupil was widely dilated, and there was exophthalmos. He had made the diagnosis of empyema of the right antrum, right ethmoidal and sphenoidal sinuses, with rupture and probable

pressure on the optic nerve. He had advised immediate opening to relieve the pressure. Under cocaine anesthesia and with the aid of suprarenal extract, the operation had been undertaken, but had been carried on with difficulty because of the free hemorrhage. A week after the operation she could count her fingers, nasal respiration was much improved, and pus was coming from the right side of the nose. Two or three weeks later it had been necessary to enter the antrum and evacuate a considerable quantity of stinking pus. The antrum tube had been removed now about six weeks; she was entirely free from headache and insomnia, and her general condition had greatly improved. She could read ordinary type with the left eye. From a study of this case it seemed probable that the sudden onset of blindness was the result of the accumulation of pus in the sphenoidal cavity and pressure on the optic nerve passing through the optic foramen.

A Case of Frontal and Ethmoidal Disease with Abscess of the Orbit.

DR. THOMAS R. POOLEY, of New York City, reported this case. The patient was a youth of nineteen who had come to him suffering intense pain around the right eye, and that side of the head. The temperature was 104°F., and the pulse 120. Six years previously this eye had suddenly swollen, and had been relieved somewhat by an incision of the lid. Two years later the sinus had been opened to relieve the swelling. Dr. Pooley had operated under ether anesthesia, exposing the orbit. The sinus was found enlarged and was curetted. On entering the depth of the orbit one or two drachms of pus escaped. An opening was then made into the anterior ethmoidal cells, and through the infundibulum into the nose. A soft rubber catheter was then drawn through, and the ends of the tube tied together. The wound was packed around the tube. This operation effected immediate improvement. Almost daily dressings were made, and at the end of two months healing was complete. Numerous nasal polypi were discovered after this operation, but they disappeared in a short time. The paper concluded with a reference to the common involvement of the accessory sinuses after scarlet fever, and the need for prompt and thorough treatment when there is external swelling. The patient was exhibited.

Empyema of the Frontal Sinus; Some Observations on Its Treatment,

DR. GEORGE L. RICHARDS, of Fall River, Mass., read this paper. He called attention to the fact that the frontal sinus varied in position, size and thickness. The danger to life of empyema of this sinus he considered to be very small. If exploratory puncture of the antrum were negative, then the source of the pus might be the anterior ethmoidal cells. Transillumination was of some value. As a rule, the entire anterior portion of the middle turbinate would have to be removed as a preliminary measure to treatment. These cases tend to get well if the drainage were thorough enough. The direction of the canal having been determined by means of a probe, a silver or hard rubber tube, curved like the probe, should be passed in and the sinus washed out. Where the purulent discharge had lasted along time, and polypi had formed, it was more difficult to decide upon the best method of treatment. The anterior ethmoidal cells should be thoroughly destroyed with the curette. He had the best results from irrigation when he had used a solution of corrosive sublimate, 1 to 10,000. The question of operation must depend upon the presence of evidence of septic absorption, of symptoms of cerebral irritation or the recurrence of attacks of pain. He preferred to make the opening between the supraorbital notch and the root of the nose, and underneath the ridge, and preferred theallet, chisel and curette to the surgical drill. The opening should be made as large as possible, and all the ramifications of the sinus vigorously curretted. The best form of drainage was by the fenestrated rubber tube. The tube should be retained at least two or three weeks. It was best to keep the external wound open for a time.

DR. NEIL J. HEPBURN, of New York City, said that in Dr. Halsted's case the blindness might have resulted from a thrombosis of the central retinal vein. Unless the pressure had occurred very suddenly it could hardly account for the very sudden onset of the optic neuritis of that grade. An ordinary optic neuritis coming on from pressure would disclose a certain progressive loss of vision. He had witnessed one case of operation on the sphenoidal abscess by an eminent surgeon, in which the cavernous sinus had been accidentally opened. The hemorrhage had been most startling, but the surgeon had retained his composure, and had succeeded in controlling the bleeding by packing in a way which had led the eye witnesses to have less dread in the future of the occurrence of such an accident.

DR. TALBOT R. CHAMBERS said that many cases of frontal sinusitis if taken in hand early might be aborted before the occurrence of the purulent stage. The accumulation of mucus in a frontal sinus was the first step of a sinusitis, and could be readily evacuated. When entering the sinus and removing bone, it was better to use an instrument which could punch out an opening. A case was mentioned in which at one sitting he had taken away the inferior turbinate and the covering of the sphenoidal sinus, and opened the whole space into one cavity. By this procedure the mucous secretion could be removed in certain cases at an early stage.

DR. SARGENT F. SNOW said that two years ago he had had a case quite similar to the one reported by Dr. Halsted. The difference was that the blindness had been a week in coming on. There had been so much pressure that the vitality of the bone had been lowered, and the operation had been done for the most part with a Buck's ear curette, slightly bent near the ring, a very safe instrument for such work.

DR. REDMOND W. PAYNE, of San Francisco, said that Dr. Richard's paper and exhibition of skulls called to mind some of his own work. He had endeavored to determine the number of anomalies met with in this region. In the formation of the sinus itself was to be found the reason for many failures. In some of the sinuses that he had examined the depth of the sinus had run back over the orbit almost to the optic foramen, both plates being exceedingly thin. In some instances in which the sinus had run back deeply it had been divided into several compartments by bony septa. Such cases showed at once the impossibility of eradicating the disease by any opening below without an attempt to reach it with the curette. The external wall should be removed either entire or in section, thus exposing the seat of the disease, and admitting of thorough exploration. If the mucous membrane lining the sinus had undergone fungus or polypoid degeneration, and two-thirds of it only had been removed, the patient would not be permanently cured. Many of these cases of chronic suppuration would go on for years. Not many cases of meningitis had been reported in this connection, but as there were many cases of meningitis following chronic suppuration of the ear he saw no reason why the same should not occur in cases of sinus disease.

DR. CHARLES W. RICHARDSON, of Washington, D. C., spoke concerning operative intervention in cases of purulent discharge from these sinuses. When pus issues from a closed cavity the proper course was to insist upon the opening of the sinus and re-

moving the diseased condition found there. It seemed to him that conservatism was not at all in place where there was a purulent discharge from these sinuses. In a sinus so accessible as the frontal there should be no question as to the wisdom of operative intervention. A very slight purulent discharge might be connected with very extensive disease. In other regions of the body in which operative intervention was much more dangerous the general surgeon did not hesitate, and he could not see why the rhinologist should be so backward about operating. No one hesitates about opening an abscess of the mastoid. These operations should be done promptly and as thoroughly as possible.

DR. R. C. MYLES said that free drainage was far better than anything else. He had always been opposed to over-curetting of these sinuses, for he was of the opinion that by such treatment the period of convalescence was greatly prolonged or indefinitely postponed. By such curetting the mucosa and periosteum were removed, and the re-formation of these tissues not only takes a long time but is apt not to re-form in many crevices, and this leads to a permanent discharge. Extensive destruction of the ethmoid cells or of bony tissue intended to protect the frontal sinus usually made the patient's condition worse than before the operation. According to his experience, the best way of obtaining free drainage was by removing the anterior end of the middle turbinate, and also the median wall of the anterior ethmoidal cells. This alone, with proper irrigation, would effect a permanent cure in the majority of these cases. It was his practice to remove the anterior wall of the sphenoidal cells rather thoroughly, never curetting the upper wall. In a few months the opening would close by contraction of the mucous membrane, but it could be quickly and almost painlessly opened with a bistoury. In the unfavorably frontal sinus cases, the great obstacle was the nasal process of the superior maxillary bone. Entrance above the orbit was the straightest way for removing this process. This could be done well only by making the opening above the supraorbital ridge. He formerly did the infraorbital operation and had experienced great difficulty in getting rid of this hard, bony process. In his opinion, all cases of acute empyema of these cells should be carefully studied before attempting operation. In chronic cases, conservatism should be given a trial. Frequently irrigation would be sufficient, or the mere extraction of a tooth, and it should be tried first, care being taken to explain to the patient that it was in the nature of a preliminary operation.

Observations Upon the Treatment of Stricture of the Lachrymal Duct by Electrolysis.

DR. L. L. MIAL, of New York City, read this paper. He said that he had found silver the best metal to use, and preferred to place the positive electrode on the wrist. As a stricture was never the whole length of the canal, it was a matter of much importance to apply the current only to the narrowed portion. He had used the volt selector, the amperemeter and a rheostat, with the Edison 110-volt current. Anyone could satisfy himself of the relaxing effect of the current by introducing an instrument which is tightly grasped, and then noting how loosely it was held after the passage of the current. Each seance should last from thirty seconds to three minutes. Several illustrative cases were reported. The author claimed that electrolysis is harmless if used properly, that it is antiseptic in its action, that it is much less painful than the usual mode of passing probe, and that it dissolves and relaxes strictures much better than any other method, thus diminishing the danger of tearing the mucous membrane and making false passages.

DR. T. R. CHAMBERS asked if Dr. Mial had used the combination of cocaine and adrenalin in the lachrymal canal. He had found that if it were passed in by a small bougie it would be possible to pass a No. 2 or 3 probe. The electrolytic treatment of these cases was new to him, and called for serious consideration, even after making all due allowance for enthusiasm.

DR. N. L. WILSON thought the advantage of electrolysis was simply to relieve the stricture. When he had begun to use electrolysis in the Eustachian tube for this purpose it had occurred to him that the method was applicable to the lachrymal duct, and he had used it in that duct with equally good results as regards relieving the stricture.

DR. C. DUNBAR ROW, of Atlanta, Ga., said that he had used electrolysis in the Eustachian tube but not in the lachrymal canal. He would like to ask whether these electrical bougies are passed through the upper or the lower canaliculus, and whether the latter is always slit before the passage of the bougie.

DR. E. E. HOLT, of Portland, Me., said that the treatment of these cases was exceedingly difficult at the best, and any improvement should be welcome. In 1881 he had spent some time with Mr. Bowman, and had studied the subject very carefully with those attending the Seventh International Medical Congress in London at that time. It was quite amusing to note the different methods

of treatment by those living in different parts of the world. He noted that Mr. Bowman had had some of his cases under treatment a very long time, one of them for fourteen years. He had remarked at the time that quicker methods were demanded in America. Dr. Holt said that his routine method of treating lachrymal disease of long standing was to dilate the lachrymal canal under ether anesthesia up to No. 13 Bowman, and put in a lead style. He believed, however, that in many cases a good deal could be accomplished by electrolysis.

DR. MIAL, in closing, said that he had used adrenalin and cocaine in the lachrymal duct, and while it allowed one to pass the probe with less discomfort to the patient, it had no effect on the stricture. He had used the electrical probe in both the upper and lower canaliculi, but for stricture of the lachrymal duct he always used the lower canaliculus, and the great advantage of the electrolytic method was that one could easily dilate to No. 5 or even No. 8. When an insulated electrical bougie of such size could be introduced the result was exceedingly good, and was obtained without risk. One should not lose sight of the fact that the strictures are relieved. Why the epiphora was not relieved in certain cases he was not prepared to say. He was of the opinion that a stronger current could be used in the Eustachian tube than in the lachrymal duct. He could not give the reason for this, but probably it was because there was more moisture in the lachrymal passages.

A Few Remarks on a Generally Unrecognized Ear Disease.

DR. H. A. ALDERTON, of Brooklyn, N. Y., read this paper. He said that the mucous form of otitis occurs more frequently in adults than in children, and often after an attack of grip. There was often little or no pain, but a stuffy feeling in the ear and a diminution of hearing. Crackling sounds on blowing the nose or swallowing was not so common as in the serous variety. Tinnitus was apt to be severe, and there might be vertiginous attacks. Inspection showed but little congestion, and the membrane in its normal position, though lacking lustre and having a dull gray color. There was a dull-looking area of hyperemia along the handle of the malleus and at the periphery of the drum membrane. In most cases the tube was obstructed. There was a noticeable disproportion between the power to hear a whisper and the spoken voice. The upper-tone limit was not much affected. The pulse and temperature were practically normal. The condition might last from a few weeks to a number of years. Inflation of the tym-

panum improved the hearing. On incision of the tympanic membrane there might be no discharge, but on inflation a stringy tenacious discharge made its appearance in the canal, and the hearing was immediately greatly improved. Douching through the external canal had seemed, in his experience, to do only harm. The treatment par excellence was incision and evacuation of the tympanum with measures directed towards improving the condition of the naso-pharynx. The drum membrane was often healed at the second dressing.

Tuberculous Otitis Media; Mastoiditis and Meningitis in an Otherwise Apparently Healthy Adult.

DR. J. F. McCaw, of Watertown, N. Y., made a brief report of this case. The patient, a male of forty-five years, he had first seen on December 11, 1900. About one year previously, without assignable cause, a thin discharge had begun from the left ear, and at intervals of two or three months there had been an attack of slight pain in the ear and sensitiveness in this region, with an increase in this discharge. There had been no special change in his general physical condition up to seven weeks before coming under observation, when he had had an attack, supposed to be the grip. About this time he had had one of the attacks of pain around the left ear, and for the last week had become lethargic and weak. On examination, he could not be aroused from his stupor, but responded to stimuli. There was tenderness over the ear and a foul discharge from the ear. The tympanic cavity was filled with granulation tissue and pus. No glandular enlargements were observed. The diagnosis of cerebral abscess was considered probable. The mastoid operation had been done the same afternoon, and this had revealed extensive bone destruction. The wall of the sigmoid sinus and the meninges of the brain were exposed during the operation, and were found to be studded with numerous miliary tubercle. The patient died twelve hours later. At the post-mortem examination the lungs, liver, spleen and kidneys were found free from tubercle, and the mesenteric glands not enlarged. Scrapings from the mastoid showed the presence of tubercle bacilli and streptococci. An examination of the brain was not permitted. The experience of most observers seemed to indicate that primary tuberculosis of the ear occurs infrequently.

DR. M. A. GOLDSTEIN, of St. Louis, reported three cases observed by him during the past ten years of tubercular mastoiditis which might possibly be considered primary. The first case had been reported about nine years ago. The patient was a little colored

boy in whom the sequestrum contained the cochlea and part of the semi-circular canals. Numerous tubercle bacilli were found in the discharge from the ear, and physical examination failed to reveal a tuberculous process in other parts of the body at that time. Eight months later this child died of miliary tuberculosis. The second case was that of a girl of nine years, whom he had operated upon about seven years ago. The granulation tissue had been found already invaded by tubercle bacilli. The child had made an uneventful recovery, and was well to-day. The third case had been operated upon twice for mastoiditis, the second operation having been about six months ago. The wound was now slowly healing, and he was inclined to think there was still a tubercular focus or nidus in the ear. Examination of the sputum and of the lungs had been negative as regards any other tuberculous process. These cases were possibly examples of primary tuberculosis of the ear.

DR. J. F. MCKERNON, of New York City, said that three years and a half ago he had had a case under observation for a short time before operation. After operation the wound had failed to heal, and after about four months examination of the granulation tissue had shown the presence of numerous tubercle bacilli. The lungs had been carefully examined by two excellent diagnosticians but no tuberculosis discovered. He had had the case under observation ever since the operation. The wound of the ear would heal at intervals, and then break down again. No evidence of general tuberculosis had yet been discovered, and he was inclined to look upon this as a case of primary tuberculosis of the middle ear. Packing the ear with gauze soaked in the valerianate of guaiacol seemed to be the only thing that provoked even temporary healing.

The Schwartz-Stacke Operation for Chronic Suppurative Otitis Media; Re-formation of the Tympanic Membrane; Secondary Myringectomy; Improved Hearing—By DR. M. D. LEDERMAN, of New York City. This paper will appear in full in THE LARYNGOSCOPE in an early issue.

A Case of Sinus Disease.

DR. EDWARD B. DENCH, of New York City, presented a patient upon whom he had operated about six weeks ago for acute mastoiditis. The internal table had been found carious, and a clot had been discovered in the sinus. There had been an unusual elevation of temperature after the operation, and on the fourth day he had ligated the internal jugular vein and had found a softened clot. Since then recovery had been uninterrupted.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting, October 23, 1901.

W. K. SIMPSON, M.D., Chairman.

A Post-Nasal Syringe.

DR. WENDELL C. PHILLIPS said that last winter he had visited Dr. White, of Richmond, and had seen at his office a useful little device, which seemed worth exhibiting. It was a little syringe for use in cases of chronic atrophic rhinitis. The instrument consists of a rubber ball to which is attached a small, soft rubber catheter freely perforated laterally. This the patient can readily insert into the nasal passages, and by squeezing the bulb the fluid is forced into the nose and naso-pharynx. It was a very convenient instrument for use at the patient's home. It is called the Success Nasal Syringe.

DR. FRANCIS J. QUINLAN exhibited the following cases:

Mycosis of the Tonsil.

The patient was a young woman having a typical form of mycosis of the tonsil, the leptothrix variety. The peculiarity about this form was that it was absolutely circumscribed—being confined to one tonsil, and would be mistaken for follicular tonsilitis.

Tuberculosis of Tonsil and Pharynx.

This patient, male, about thirty years old, had been at another clinic under treatment for tubercular disease of the rectum. On examination there was found a large fungating growth at the base of the tonsil, which involved pharynx. A number of microscopic sections made it evident that the swelling was tuberculous. As an experiment the man had been given inunctions and the iodides, with considerable improvement. This showed how many syphilitic cases afford good soil for tuberculous infection.

Syphilis of Nose and Pharynx.

This woman had what would appear to be a lupoid sore on the nose. Further examination, especially of the pharynx, indicated that syphilitic lesions coexisted. She was now using mercurial ointments with benefit. Dr. Quinlan also showed a man

having a syphilitic process involving the columnar cartilage. He also had been on mixed treatment and on inunctions, and had improved greatly under this treatment. The two last patients were exhibited to show the disease occurring in one patient symmetrically, and in the other asymmetrically—namely, the disease attacking in the former the cartilage.

Malignant (?) Growth.

The man had had a growth since last July, and complained of difficult and painful deglutition. The sore had evidently started from the floor of the mouth, but it now involved the base as well as the side of the tongue, and there was a distinct infiltrating glossitis. There had been no response from anti-syphilitic treatment, although there was a history of a primary lesion.

DR. W. C. PHILLIPS said that the patient having what was supposed to be a tubercular ulceration of the soft palate, seemed to him to present the appearance of a syphilitic ulceration. He had never seen such an ulceration of a tuberculous nature in the soft palate.

DR. EDWARD L. MEIERHOF said that he had seen quite a number of lesions of the tongue, and thought syphilis could be positively excluded. There were several very ragged teeth in the lower jaw, and there was an enormous adenopathy on each side of the inferior maxilla.

Falsetto Voice—Treatment.

DR. ARTHUR B. DUEL presented a young man, a native of Bermuda, with a falsetto voice. (He said that) these cases were not uncommon, yet very little had been written about them. About all that he had been able to find by American writers had been by Dr. Makuen, of Philadelphia. It seemed to him that a cure had been effected in this case largely by suggestion. By holding down the patient's larynx he could be induced to speak in a proper voice, but would at once break into a falsetto on relinquishing the hold on the larynx. He had been assured that his trouble could be quickly overcome by holding the larynx in a certain way and practicing a few scales. He had been very quickly cured, and now found it almost impossible to speak in his old voice. Dr. Duel said that he wished to bring out very clearly the fact that this form of functional neurosis ^{John} could ^{be} easily cured by proper measures.

A Case of Laryngeal Neoplasm.

DR. THOMAS J. HARRIS presented this case, that of a man over eighty years, who had had loss of voice for over a year. The case

had been under treatment for about two months. The interesting points in the history were that he had no pain in the larynx, scarcely any glandular enlargement, and the loss of voice was complete. Examination of the larynx showed a cauliflower growth, which had not increased since he had been under observation. It did not appear to be subglottic. While he felt pretty sure that this was a case of malignant disease, no microscopical examination had been made, as he did not feel like removing a portion for examination. Nor had the man been subjected to treatment with the iodides. In this connection Dr. Harris mentioned another doubtful case occurring in a younger man, a case of Dr. Phillips'. There was in this case a mass involving the posterior third of the left vocal cord. Here also there had been no pain. There had been no marked improvement under the iodides, and no change in the growth in the course of the three months he had been under observation.

DR. PHILLIPS said he had seen the second case referred to by Dr. Harris. The man admitted that there might be some specific taint, and he had been put upon iodides during the summer. On his return in September the general appearance of the growth had been very much improved, though its size had remained about the same. He had been advised to push the iodide up to forty or fifty drops three times a day. He had returned in a few days afterward stating that a medical friend had taken him to another laryngologist, and that a section had been removed and examined, and had been reported to be malignant. The growth involved the posterior two-thirds of the left vocal cord.

DR. QUINLAN said that the laryngologist referred to was himself. He had seen this growth, and its appearance at first had suggested to him a typical epithelioma. The first section, however, examined had been reported to be papilloma, but other specimens had been examined by a skilled microscopist and reported to be undoubtedly an epithelioma.

DR. J. W. GLEITSMANN said that his experience with these malignant growths had not been very favorable as to the ultimate issue, most of the patients having died within a very few years. He desired to report upon a case which he had hoped to save because it was in an early stage and the operation had been done by a surgeon especially skilled in this work. It was an unilateral growth, and a portion removed proved to be malignant. The operation intended to be performed was unilateral laryngectomy, but as a carcinomatous gland had been found in front, the larynx was wholly taken out and the trachea sewed to the skin. The man had done quite well for some

time, but about five months later he had returned with the whole cervical region involved in a most extensive carcinomatous infiltration. The case was reported because of the early diagnosis made, and the fact that the growth had been entirely confined to one side of the larynx, the posterior commissure being entirely free. The operation had been a thoroughly radical one. This had been his usual experience with other cases of this class.

DR. W. F. CHAPPELL thought Dr. Harris had shown a great deal of good judgment in doing nothing to his patient, not even removing a portion for examination. He thought a growth on the posterior end of the cord was most unfavorable for operation. The best chance for a non-recurrence was when the growth was on the anterior third of the cord.

DR. W. K. SIMPSON endorsed the view expressed by the last speaker. His experience had been that when there was any malignant growth of the posterior portion of the larynx that was largely extralaryngeal, one could not tell from the laryngeal examination how far it extended.

The Early Appearances of Laryngeal Tuberculosis.

DR. H. HOLBROOK CURTIS. This paper will be published in full in the next issue of THE LARYNGOSCOPE.

DR. GLEITSMANN called attention especially to one of the symptoms mentioned, *i. e.*, the unilateral congestion of the cords. This symptom, he said, was always suspicious to him either of tuberculosis or of cancer. In the last eighteen months he had seen more than one case in which a thorough examination of the chest and frequent observations of the temperature had failed to show evidence of tuberculosis, and yet an injection of tuberculin had brought out a reaction. The larynx was a good place in which to study this reaction. Reference was made to two cases to show that even in far advanced cases it was sometimes very difficult to make a diagnosis. In one case he had made a diagnosis of tuberculosis of the larynx in which he disagreed, and the patient had been subsequently reported to him as perfectly well. The other case had been brought to this Section by one of the members, and had been previously treated in Troy for tuberculous laryngitis. The man had then been sent to Denver, but on his way there had consulted a noted laryngologist in Chicago, who had told him that he had no tuberculosis and had sent him home. The speaker said that he had seen this man a short time afterward and had insisted that the diagnosis of tuberculosis of the

larynx was correct. Eventually tubercle bacilli had been found in this case. These cases were reported to show the difficulties experienced, even by skilled laryngologists of high repute. He further would insist upon the existence of primary tuberculosis of the larynx, and could produce two cases of this kind. The burden of proof should rest on those who deny its existence.

DR. W. F. CHAPPELL agreed with the author of the paper regarding what he had said about the commissure being the favorite seat of early tuberculosis. He had observed a laryngorrhea, which in quite a number of cases had preceded any changes that could be observed with the laryngoscope. With this laryngorrhea was usually associated a peculiar pale appearance of the pharynx, larynx and trachea. This laryngorrhea was the premonitory symptom of tuberculous laryngitis in quite a number of cases. The location of the early lesion is a good guide to the prognosis. Where the disease begins in the posterior commissure the prognosis is much more unfavorable than in those in which the primary appearance is in the cord or in the ventricular band. If there was a redness or slight nodular appearance on one of the cords or ventricular bands, it might last for a long time without breaking down, and even after breaking down it often remained circumscribed. When the first appearance is in the posterior commissure it is apt to spread upward rather rapidly. Regarding the treatment, he would say that he had had some considerable experience with curetting the larynx, and he looked upon it as a very unwise and unfortunate practice. He only favored curetting in tubercular laryngitis when there is much thickened tissue without any broken surface, and when the pulmonary process is quiescent. Under other circumstances curetting would usually leave a raw surface which rarely healed and opened new channels for tuberculous infection.

DR. T. J. HARRIS asked if it had been the experience of others that every case of infiltration of the posterior commissure is tubercular. He had been taught in Vienna that these cases might be catarrhal, and that in the absence of bacilli in the sputum or of pulmonary signs one was not warranted in diagnosing a tubercular condition simply because of the existence of this infiltration. He called attention also to hoarseness as a result of impaired action of the cord. He had seen such a case eight or ten years ago in a young man who had developed a hoarseness after an attack of pleurisy. There was no infiltration of the posterior commissure, but a seeming interference with the action of one vocal cord. There was no edema of the arytenoid, but the cords did not come together. The patient

went to California, and, after a residence there for two or three years, returned to this city, and was now a practising lawyer. His voice had remained perfectly clear.

DR. GLEITSMANN said that infiltrations of the posterior commissure on the laryngeal side were not always tuberculous. Infiltrations on the esophageal side in cases suspicious of tuberculosis would be found to be tuberculous in their nature, but there were many infiltrations of the commissure which had nothing to do with tuberculosis. He had seen infiltration of such a degree that the patient had been unable to talk distinctly. They occurred generally in those who do not use their voice properly. Some of these infiltrations were so dense as to resemble connective tissue.

DR. HARRIS said that he was glad to hear Dr. Gleitsmann's remarks on this subject. At the present time he had such a case under observation, in which examination of the chest and of the sputum had been negative. The patient, a young woman, had a loss of voice at night with a clear voice in the morning.

DR. MEIERHOF commended the paper because of its very practical character. If we were to accomplish anything in this apparently hopeless class of cases it certainly must be done in the very early stages. In his clinic he saw many persons who were particularly susceptible to tuberculosis, but most of the cases were seen only in the advanced stages, and they were very difficult and unsatisfactory ones to treat. There is no question that the cases seen early are curable in a great measure if they obtain the benefit of proper climatic changes, etc.

DR. QUINLAN said regarding the crenated condition of the posterior wall and the clumsy swallowing, that in all cases in which such symptoms were present he looked for increased pulse and respiration and some elevation of temperature. Such observations along with the appearances presented by the laryngoscope sometimes enable one to treat these cases quite early. Surgical interference, even in the later stages, seemed to him almost a relic of barbarism. Orthoform accomplishes wonders in these cases; it causes a zone of leucocytes to form around the diseased area, allays irritation and promotes healing.

DR. W. K. SIMPSON said that he had come to the conclusion that there are a certain number of cases of interarytenoid thickening apparently not tubercular in their nature. He was inclined to think that too much stress had been laid upon an early anæmia of the larynx in these cases. According to his experience there is frequently an early and well-marked hyperæmia.

Dr. Curtis' Closing Remarks.

DR. CURTIS said that primary laryngeal tuberculosis could not be asserted without post-mortem evidence. In regard to the infiltration of the commissure, he thought great importance should be given to the crenated papillary neoplastic deposit rather than the infiltration itself, which might be due to other causes than tubercle. He did not agree with many observers that treatment was better than climatic effect. Nor could he agree that marked anæmia of the pharynx was a symptom always existing in the early stages of the disease. He wished to dwell upon the morning depression of temperature to sub-normal instead of looking for a febrile state in the early manifestations. As for early treatment, he had found iodoform and ether inhalations most soothing and efficacious. He did not believe in surgical interference except in cases in which the epiglottis seemed to be principally involved.

Stenosis Following Intubation.

DR. J. A. KENEFICK presented this case, which had been reported by him last December. The child had come to the Manhattan Eye and Ear Hospital in June, and had been transferred to the Willard Parker Hospital for diphtheria. He had been discharged from there on October 12. While at that hospital he had been intubated twenty-eight or thirty times. Dr. Kenefick had then treated him with tubes, gradually increasing in size, beginning with the two-year-old and finally using a specially made six-to-eight tube. On December 19th he had been found without his tube, and had been without it ever since, though before that he had been able to go without it only for a short time. The boy's general condition had improved, and he could now phonate quite well. When he had first intubated, the feeling had been that of passing the tube through a mass of granulation tissue, but this had gradually become less distinct during the treatment.

DR. CHAPPELL said that he had had one such case, and, failing in every other way to secure relief, he had finally done a tracheotomy and had left the tube in for a month. Since then there had been no stenosis and no further need for the tube.

DR. HARRIS referred to a case which he had been hurriedly summoned to see in the night. Before tracheotomy could be done the child had died. In this case, one of repeated intubation, the child had been suddenly seized with dyspnea and a search for the tube had failed to find it. This emphasized the necessity for keeping these patients under careful observation.

DR. DUEL reported a case in which tracheotomy tube had been retained. On attempting intubation it could not be done. He had then done a thyrotomy, and had found that there had been an erosion of the trachea, and the subsequent contraction had almost completely closed off the trachea above the tracheotomy wound. He had then sewed in a long tube in order to hold this band apart, and had subsequently inserted a much longer tube which came down below the tracheal wound. The case had passed through many trying vicissitudes, but was now doing well without any artificial tubes.

DR. SIMPSON said that it had never yet been positively determined what was present that necessitated the first repetition of an intubation. In one case coming to autopsy there had been found a complete breaking down of the cricoid cartilage. After intubation had been done a number of times the cause was entirely different—it was adventitious tissue due to the pressure of the tube.

DR. QUINLAN said that, at the suggestion of Dr. O'Dwyer, he had kept the mouth apart as long as possible with a mouth gag, and had nourished the child by rectum. Since he had adopted this practice he had had no trouble with the tube. This might, of course, have been a coincidence. In one case in which the tube had been retained 110 days, and the child had died suddenly, an autopsy had been obtained, and had disclosed a sacculated condition of the mucous membrane, but no adventitious tissue. Where there was danger of immediate suffocation, a rapid incision should be made into the crico-thyroid membrane.

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SELECTED ABSTRACTS.

Widening of the Nasal Bones by Benign Polypus—TREITEL (Berlin)—*Archiv. für Laryngologie*, Bd. xii, heft 1.

It is well known that polypi are able to expand the nose laterally, and cases have been reported by Richter, Koenig, Mackenzie, Heymann, Velpeau and Voltolini. Nevertheless, the number of reported cases is small. In most of the cases, where any accurate information is given, it is stated that the new growth, simply by its mass, pushed the nasal bones asunder, so that the handle of a scalpel could be inserted into the furrow between their edges.

The author's case, which is described with great minuteness, differs from these, in that, while there was great lateral expansion of the whole nose, yet examination showed that the nasal bones were firmly united to each other, and the increased breadth resulted from an enormous overgrowth of the nasal bones themselves. The recent work of Cordes shows that increased bony growth may be the result of polyp. Why this should occur in one case, and in another the bones should be simply driven apart, is explained by the author as follows:

In order to produce an overgrowth of bone, the presence of polypi and the consequent irritation and increased ossification must occur just at the age when the bony framework of the nose is in its most active stage of formation. This is from the sixth to the fifteenth year. In the author's case the history makes it probable that polypi had been present from the eighth year. When the irritation from polypi begins after the period of development of the nasal bones, no proliferating ostitis occurs, and if the mass of the tumor is sufficiently large, the nasal bones are simply driven apart.

VITTUM.

A Contribution to Our Knowledge of Bony Cysts of the Middle Turbinal—ALBERT SUNDHOLM (Helsingfors)—*Archiv. für Laryngologie*, Bd. xi, heft 3.

After reciting a number of cases the author speculates as to the cause of these growths. The turbinals are to be regarded as nothing else than the ends of lamellæ of the ethmoid, which project into the nasal cavity. It is most probable that these cysts are simply misplaced ethmoidal cells. The author thinks that they are congenital and in most cases cause no disturbance, although they cause a marked narrowing of the nasal cavity in its upper portion. Where, however, a rhinitis becomes associated with this condition, the nasal obstruction becomes so great that a physician is consulted and the condition discovered.

VITTUM

What Physiological Significance Has the Uvula for the Singing Voice?—W. BOTTERMUND (Dresden)—*Archiv. für Laryngologie*, Bd. xii, heft 1.

This paper is in the main a transcript of an opinion given by the author in a medico-legal case where a singer had brought suit against a surgeon for the complete removal of the uvula. The claim was made that permanent injury had been done the voice, and the author was requested to give an expert opinion.

Without attempting to follow out the author's reasoning, it may be said that the uvula is an appendage of the soft palate and is necessary to the complete and perfect performance of its functions. The utmost perfection of function is demanded in a singing voice, especially in the formation of gutturals and in the nasal production of the vowels in vocalizing, which latter depends almost entirely on the position assumed by the soft palate in connection with the uvula. A diseased uvula is more or less disturbed in its functions. If it is greatly misshapen, it may by friction act like a foreign body and disturb phonation.

A diseased uvula may be restored to its normal functions by surgical means. Interference with phonation caused by a very long uvula may be relieved by operation. In this case the uvula is shortened. A complete removal of the uvula with no other indication than a simple elongation is not the custom in laryngological practice. The operation of shortening the uvula, formerly so much in vogue, is now only performed where the organ is of excessive length and where disturbances can be clearly traced to that condition.

VITUM.

The Influence of Ulceration of the Mucous Membrane in Acute Suppuration of the Auxiliary Sinuses—GEORG AVELLIS (Frankfort-on-Main)—*Archiv. für Laryngologie*, Bd. xi, heft 3.

The cases of acute suppuration of the sinuses which do not heal are, according to Zuckerkandl, those where some obstruction exists to the exit of the secretion. The author is inclined to think that he has discovered another cause. His opinion is based on two cases of acute inflammation of the frontal sinus, where the symptoms persisted in spite of removal of the middle turbinal and probing the ductus frontalis. Simple trephining was done, and on the posterior wall of the frontal sinus there was found in each case an ulceration the size of the thumb nail. At this point the bone was pale, slightly roughened and necrotic. In both cases most extreme pain was present during all the course of the trouble. The cavity was not obliterated, for the symptoms soon subsided and a complete cure was effected without deformity.

VITUM.

A Contribution to Our Knowledge of the So-Called Singers' Nodules—OTTOKAR CHIARI (Vienna)—*Archiv. für Laryngologie*, Bd. xi, heft 3.

In order to determine whether these nodules are the result of diseased glands, the author undertook the task of making serial sections of a number of specimens. First he restricts the term to those growths which are not larger than a pin-head, are situated near the middle of the free border of the vocal cord and are pale. Pedunculated growths are excluded.

The author argues that if these growths arise from the degeneration of a gland, then fragments or traces of the gland should be found by careful serial cutting.

Nine typical specimens were successfully cut. In no instance was any evidence of glandular tissue found. Three were found to consist of hypertrophy of the epithelium and its underlying connective tissue, with dilated blood vessels and open spaces, but no trace of glandular tissue. In the other six the structure was similar to that of a papilloma. Little masses of epithelium were indeed found which, however, appeared to indicate a simple epithelial thickness, or the division of the nodules into several papillæ.

Several other growths were examined, but they were not typical nodules, and only in two cases, which were cystic in nature, did he discover the remains of glands.

VITTM.

The Relations of the Maxillary Antrum to the Sphenoidal Sinus and to the Anterior Ethmoidal Cells—A. ONODI (Budapest)—*Archiv. für Laryngologie*, Bd. xi, heft 3.

The author calls attention to a condition which has not been mentioned either by Zuckerkandl or by Hajek. This is an extension upward of the maxillary antrum and a forward and downward extension of the sphenoidal sinus, until they approach each other and have only a very thin common wall of bone separating them. This condition he found in several instances.

In regard to the anterior ethmoidal cells, the author cites a condition which has been overlooked by Hartmann in his recent work on the frontal sinus. In several instances direct communication was found to exist between the maxillary antrum and an anterior ethmoidal cell. In some instances the ostium maxillare was situated in front of and above the anterior extremity of the lower turbinal. The opening of the frontal sinus and of the anterior ethmoid cells lay behind the ostium.

In several instances the canal from the frontal sinus and the anterior ethmoid cells opened on a vertical plane with the ostium.

VITTM.

BOOK REVIEWS.

A Text-Book on Diseases of the Ear, Nose and Throat. By CHARLES H. BURNETT, M. D., Philadelphia; E. FLETCHER INGALS, M. D., Chicago, and JAMES E. NEWCOMB, M. D., New York. Octavo, cloth, 716 pages, 282 illustrations. Price, \$5.00. Publishers, J. B. Lippincott Co., Philadelphia and London, 1901.

Though a great tendency prevails, especially among our confreres abroad, to separate otology and laryngology, and to consider these special branches distinct and independent, there is still a sentiment in America to maintain a closer association in the field of otology, rhinology and laryngology. Especially is this desirable in the production of the more exhaustive treatises in our field of science, and the volume under consideration is a joint text-book on these diseases and their treatment.

Like the "American Text-Book of Diseases of the Ear, Nose and Throat," this work is exhaustive in its scope, and has an additional advantage in having but three main sub-divisions, each written by a practical teacher specially familiar with his section.

Section I, by Chas. H. Burnett, of Philadelphia, treats of the Diseases of the Ear. In greater part the arrangement and character of this section is essentially a revision of the author's "Text-Book on the Diseases of the Ear."

Many chapters, especially those on Anatomy of the Ear, Therapy and Sequellæ of Chronic Suppurative Otitis Media, have received more consideration.

Section II comprises the Diseases of the Nose and Naso-Pharynx, by E. Fletcher Ingals, of Chicago, assisted by Otto T. Freer, of Chicago.

This chapter is thoroughly up-to-date and is especially rich in practical suggestions. Special prominence is given to the chapters on Adenoids, Reduction of Septal Deflections and Treatment of the Accessory Sinuses.

Section III, by Jas. E. Newcomb, comprises the Diseases of the Pharynx and Larynx. This section is unusually well presented and the literature of the subject is cited up to date.

A prominent chapter on Diphtheria is included, together with latest data concerning anti-toxin and its administration. The experience of the author with Malignant Neoplasm of the Larynx makes this chapter of more than usual value.

We must note that the index of this large volume is rather incomplete and scant.

The text-book, as a whole, is an unusually good one, and the subject matter has been carefully prepared.

The Accessory Sinuses of the Nose: Their Surgical Anatomy and the Diagnosis and Treatment of Their Inflammatory Condition By A.

LOGAN TURNER, M. D. (Edin.), F. R. C. S. Ed., Surgeon for Diseases of the Ear and Throat, Deaconess Hospital, Edinburgh. Large octavo, cloth, 212 pages, 40 plates and 81 illustrations. Price, 12 shillings (\$3.00) net. Publishers, William Green & Sons, Edinburgh, 1901.

In 1898 our esteemed collaborator, Dr. A. Logan Turner, delivered a lecture before the Fellows of the Royal College of Surgeons of Edinburgh on the subject of "The Illumination of the Air Sinuses of the Skull, with Some Observations Upon the Surgical Anatomy of the Frontal Sinuses." In 1899 Dr. Turner was awarded the surgical prize of the above scientific body for an essay on "Racial Characteristics of the Frontal Sinuses, Based Upon the Examination of 578 Skulls."

The subject matter contained in these communications form the basis of the presented volume, to which have been added additional chapters on the surgical anatomy of the maxillary sinus, the ethmoidal and sphenoidal cells. Three chapters have also been included relative to diagnosis and treatment of the "Suppurative Affections of the Nasal Accessory Sinuses."

It is evident that the author has had placed at his disposal an unusually valuable anatomical collection to carry out these investigations. The outcome of these investigations has been a thoroughly classical monograph, possibly the most complete thus far published on this subject in the English language, and presented in a thoroughly artistic style.

The anatomy of the accessory cavities is given a most careful treatment, and the detailed descriptions are greatly enhanced by a series of beautifully executed drawings and photographs of original dissections and skulls.

Chapters vii, viii, ix and x, consider, respectively, transillumination, etiology and pathology, diagnosis and treatment of suppuration in the accessory sinuses. The variety in technique of transillumination is given very exhaustive consideration. In the chapter on diagnosis of suppurative sinusitis, especially of the chronic form, every form of examination and exploration is minutely described. In the concluding chapter, on the treatment of suppuration of the accessory sinuses, every technique operation and recent suggestion concerning treatment is given space.

The typography of the volume and the clearness and excellence of the many plates is unusually fine and deserves the highest compliment.

We congratulate Dr. Turner on the production of this classic and beautiful volume.

Physician's Visiting List (Blakiston), 1902. Fifty-first year of publication. As popular as ever. Price, \$1.00. Published by P. Blakiston's Sons & Co., 1012 Walnut street, Philadelphia.

Diseases of the Upper Respiratory Tract, the Nose, Pharynx and Larynx. By P. WATSON WILLIAMS, M.D. (London), Physician in charge of the Throat Department at the Bristol Royal Infirmary; Physician to the Bristol Institute for the Deaf and Dumb. Fourth Edition, octavo, cloth, 436 pages, 207 illustrations, 12 colored plates and 20 stereoscopic plates, together with portable stereoscope. Price, \$6.00. Publishers, Longmans, Green & Co., New York, London and Bombay, 1901.

We have commented so favorably upon previous editions of this excellent book that it will be only necessary to refer to the new features contained in the present (fourth) edition.

The contents of the volume has been considerably increased mainly owing to additional chapters on "Diphtheria" and "The Diseases of the Nasal Accessory Sinuses," and to a very large increase in the number of illustrations.

The most attractive feature of this edition consists of the reproduction of an interesting series of stereoscopic plates, and with each volume is furnished a portable stereoscope to be used in connection with these plates.

Several valuable paragraphs on subjects of clinical importance have been added and serve to enhance the practical value of the book.

The excellent series of specially prepared stereoscopic plates is a very effective form of illustration and brings out many features in the preparations which might otherwise be lost.

The Surgical Anatomy and Operative Surgery of the Middle Ear.

By A. BROCA, Surgeon of the Trousseau Hospital, Supernumerary Professor to the Faculty of Medicine of Paris. Translated by Macleod Yearsley, F. R. C. S., Surgeon to the Royal Ear Hospital, London. Octavo, cloth and gold, 64 pages, 56 illustrations. Price, \$1.00. Publishers: Rebman Co., Ltd., 129 Shaftesbury Avenue, Cambridge Circus, London, 1901.

The translation into English of this excellent French monograph by Mr. Macleod Yearsley, presents it for the ready perusal of American and British otologists.

The surgical anatomy and topography of the middle ear is of great importance to us, especially in the light of recent investigations and the many variations in operative technique. The clear and concise description of this field by a surgeon of Broca's wide reputation and experience makes this monograph unusually valuable. Every phase of operative surgery of the ear has been carefully considered in detail, especially the several variations of the mastoid operation.

To the exhaustive description is added a series of excellent photographs and illustrations, identical with those used in the original French monograph. No progressive otologist should fail to secure a copy of this monograph.

M. A. G.

Anatomy, Descriptive and Surgical. By HENRY GRAY, F. R. S., Lecturer on Anatomy at St. George's Hospital, London. Thoroughly revised American from the 15th English Edition. In one imperial octavo volume of 1,246 pages, with 780 illustrations. Price, with illustrations in black, cloth, \$5.50 net; leather, \$6.50 net. Price, with illustrations in colors, cloth, \$6.25 net; leather, \$7.25 net. Lea Brothers & Co., Philadelphia, 1901.

Perhaps the most popular and universally known of all medical works in the English language is "Gray's Anatomy."

No further comment concerning this masterpiece of anatomical literature is required than to herald the appearance of a new revised American edition from the Fifteenth English edition.

Additional chapters and illustrations on Histology and Embryology have been added to this "New Century" edition.

Progressive Medicine, Vol. III, September, 1901. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 428 pages, 16 illustrations. Per annum, in four cloth-bound volumes, \$10.00. Lea Brothers & Co., Philadelphia and New York.

This volume contains but one chapter of special interest to our readers, namely, that on "Diseases of the Thorax and Its Viscera," and a well-written chapter on "Pulmonary Tuberculosis," by Wm. Ewart, bringing the literature of the subject up to date, is specially worthy of mention.

Another chapter on "Bronchial Affections and Their Treatment," contains many practical suggestions for the Laryngologist. There are also small chapters on "Coryza," "The Treatment of Hay Fever," "Influenza," "Whooping-Cough" and "The Thyroid and Thymus Glands."

Atlas der Krankheiten der Nase, ihrer Nebenhöhlen und des Nasenrachenraumes. By DR. P. H. GERBER, of Königsberg. Issued in 6-7 parts, each containing 5-6 lithographic plates, with descriptive text. Price per part, 6 marks (\$1.50). Published by S. Karger, Karlstrasse 15, Berlin, Germany, 1901. American agents, Lemcke & Buechner, 812 Broadway, New York.

Parts 5, 6 and 7 of this excellent atlas have just been issued. Section five contains a series of plates illustrating the affections of the accessory sinuses. Section six comprises tuberculosis and syphilis of the nose and naso-pharynx. Section seven illustrates nasal deformities. The publishers announce that the last part (Section 8) will appear within six weeks.

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ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

THE EARLY APPEARANCES OF LARYNGEAL TUBERCULOSIS.

BY H. HOLBROOK CURTIS.

The manner of infection in tuberculous laryngitis has lately been the subject of much discussion. The weight of evidence, however, is in favor of the theory of a secondary sub-mucous infection either through the lymphatic and vascular system, or through the lymph spaces by infection of their endothelial lining membrane. Jonathan Wright has demonstrated that the laryngeal epithelial cells may be invaded by the bacilli independently of either superficial erosion or the minute erosions due to micrococci. The question as to primary tuberculosis of the larynx, in the absence of any well established post-mortem proof of its existence, has been pretty definitely disposed of. The almost isolated cases reported by Orth and Demme, being rather the exceptions which prove the rule*, but which do not allay the doubt of such observers as Störk, Schrötter, Friedrich, etc.

If we regard the infection as secondary and liable to occur from the contact of the normal mucous membrane with the bacilli-laden sputum of the tuberculous patient, the question immediately arises, how do we explain the immunity from laryngeal tuberculosis of a majority of phthisical victims in the advanced stage of the disease?

It has been the writer's experience that autoinoculation of the larynx occurs in recently infected cases, possibly before the tox-

* Frederick, p. 153. Dis. Resp. Tract.

ins have rendered the larynx less prone to the possibility of auto-infection by the bacilli in the sputum. For we find many cases in our clinical experience in which the pulmonary disease has not advanced to such a stage that sputum is an appreciable factor.

That the lymph channels and glands are a favorite abiding place for the tubercle bacilli—their presence being unsuspected—has been shown by Strassmann* who found tuberculous tonsils in thirteen out of twenty-one cadavers who had died of tuberculosis. That the pharyngeal lymphatic ring may be the seat of a primary infection has been abundantly proved. It has been observed that the tendency of tuberculosis of the tonsils is to become latent, perhaps only to spread to other areas as a result of surgical interference.† That the lymphatics are the favorite culture ground of the bacilli in the larynx is shown by the predisposition of the tubercle to invade the inter-arytenoid region, the posterior third of the vocal bands and the epiglottis—all rich in lymph tissue.

It is interesting in a paper of this kind to briefly touch upon the pathogenesis of tuberculosis. Laennec applied the term *crude tubercle* to a macroscopic node of *yellow* color resulting from a caseation of coalesced gray nodules, or, *military tubercle*, which the microscope further reveals as made up of innumerable gray translucent masses, *sub military tubercle*. The correct definition of the word tubercle to-day should refer to the latter subdivision. Each element is an entity, an infective granuloma‡ of inflammatory origin, resulting from irritation of any invaded tissue cells by the bacillus tuberculosis or its toxins. Under the microscope typical tubercles are made up of leukocytes, epithelioid cells, giant cells and possibly a reticulum. The mass with its characteristic arrangement of cell elements is prone to undergo caseous degeneration or, in absence of degeneration, the bacilli disappear and cicatricial tissue results.

That the infection takes place in the larynx at an early stage of a pre-existing pulmonary complication may be difficult of explanation. We know that the tubercle most frequently appears in the sub-mucous layers, more or less distant from the epithelium, and oftentimes the mucous membrane is of a healthy type, until the swelling caused by the rapid invasion of the tuberculous infiltration lends credence to our suspicion of the existence of the

* Virch. Arch. XCVI, p. 319.

† Kafemann, Bresgen Samml., II, H, 4-5.

‡ Cameron, Toronto Internat. Text B. Surg., p. 236, VI.

dreaded disease. In several of my own cases the presence of bacilli was never discovered in the sputum until after the edematous and ulcerative stage had commenced—nor was the so-called characteristic pallor of the patient's larynx or pharynx visible. In fact, no physical sign gave warning of the approach of the disease except that the vocal cords were sluggish in response to vibratory movement and the *morning temperature of the patient was* below normal (from 1° to 2°). Within a week I have sent to Colorado a patient who exemplifies this condition in respect to the absence of bacilli in his sputum, but there is evidence of edema and a constitutional exhibition of profound disturbance with slight afternoon temperature commencing—the pulmonary signs being negative. It is a mistake to look only for superficial erosions in suspected cases; much more important is the close examination of the inter-arytenoid space and the crenated appearance of the fold. Then, again, before any edematous condition of the arytenoid tissues supervenes, we must watch carefully for the sub-mucous yellowish gray spots which appear sooner or later beneath the translucent membranes of this region and the ary-epiglottic folds. These early manifestations of tubercle are sometimes present and may be demonstrated before even a swelling of the folds or arytenoid takes place, for the latter condition is due to the rapid development of these sub-mucous foci of infection. It is in these cases early diagnosed that we may hope to obtain brilliant results from the injection of guaiacol, carbolic acid or other antiseptics into the tissues, instead of waiting for the ulceration which we would attack by the curette after the method of Heryng, afterwards applying lactic acid, or by the even more heroic method of Krause with his cutting forceps and spoons. Another indication of the possibility of a tuberculous infection in its initial stage is a simple persistent congestion of one cord with a slightly swollen appearance, the mucous membrane being markedly vascular over the entire cord. I have had two such cases which after a year developed laryngeal tuberculosis. In one of these there was a neoplasm starting from the arytenoid resembling a sessile papillomatous thin growth, which covered half the cord longitudinally. This growth was probably a tuberculous neoplasm, as it appeared to exist under the membrane and was very difficult to curette before destroying it by lactic acid application. Both these cases later showed tubercle bacilli; one, however, has apparently recovered, the other one, which presented the growth, having succumbed to general tuberculosis.

The case which recovered has been living in Colorado and California for two years. I had the opportunity of examining him the other day and found the cord seemingly rounder than the other, but having lost its vascular aspect. All traces of edema had entirely disappeared and the larynx looked normal in every way. In the early manifestations of laryngeal tuberculosis there is always a feeling of general langor and debility complained of, far in excess of that which the lung complication alone would cause, for in many cases there is no physical evidence of pulmonary complication. We know that the autopsy frequently discloses, in persons who have died of other diseases, healed cicatrices of tuberculous tissue in the lung, which condition had been unsuspected during the life of the subject. This exhaustion which I have alluded to must consequently be regarded as pathognomonic when it occurs with a subnormal morning temperature and evidences of laryngeal disturbance and lack of motility of the cords. This lack of motility of the cords may arise either from a beginning muscular infiltration or from pressure upon the recurrent nerves exerted by an enlarged lymphatic gland. In the latter case the disturbance of motion is generally unilateral. Following closely on these symptoms comes the consciousness of the possession of a larynx, which in turn ushers in the clumsy impression in swallowing and vocal fatigue in talking. Later, when infiltration goes on to a necrotic stage with erosion, we have the pain and dysphagia which ushers in the final tableau in all its vivid horror and distress.

If we can, by studying the initial evidences, find a means of averting this disease, the management of which is the most lamentable experience in our specialty, it behooves us to do so; and only by coming together and discussing a subject of this kind are we enabled to profit by one another's experiences and to widen our knowledge of the means to an end. I leave the subject with these few observations to the discussion of the section with an invitation to take up the subject of treatment.

REPORT OF A CASE OF SARCOMA OF THE RIGHT TONSIL.

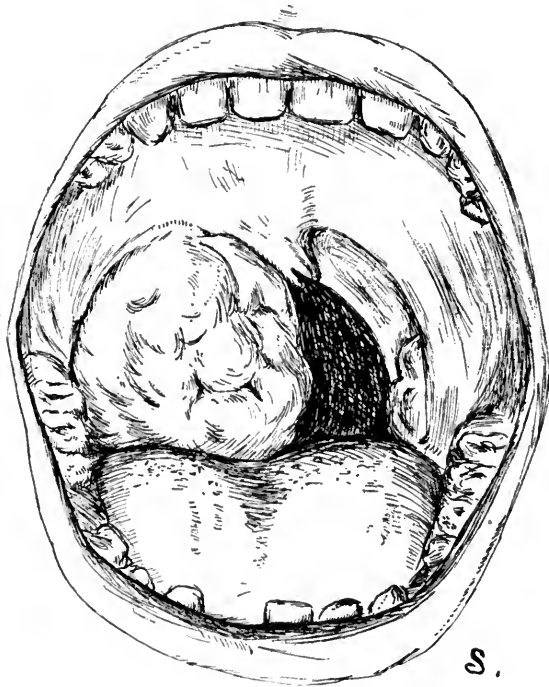
BY BURTON S. BOOTH, M.D., TROY, N. Y.

A. M., age forty-two, male, native of Wales. Mother died of childbirth, father's history negative. Paternal uncle and two aunts died of "stomach trouble." One brother died of diarrhea. Patient does not recall having had any diseases common to childhood. He had rheumatism twenty years ago, about the same time he had quinsy. Since that time he has had numerous attacks of follicular tonsillitis, occurring each year with regularity. For the past seven years he has been troubled with swelling and soreness of the tonsils on the slightest exposure to cold, with difficult deglutition. At times there would be a discharge of purulent material, these attacks lasting five or six weeks. Of late he has had soreness with evidence of suppuration. He denies having had any venereal disease, he never drank or smoked to any excess, sleeps well, appetite poor, troubled with constipation for five or six weeks for which he has taken cathartics. He does not complain of indigestion, but has lost a great deal of flesh lately. Present trouble began five or six weeks ago. As near as can be ascertained he first complained of a sore throat, and soon after felt pain in lower left side. At various times he expectorated and blew from his nose a blood-stained muco-purulent material. He does not have pain in the ear, but at times he has trouble in swallowing and coughing on account of the dull pain.

On examining the throat a new growth was seen to be occupying the right tonsillar, naso-pharyngeal and laryngo-pharyngeal regions, extending beyond the median line. The mass appears to be bluish-red in color and to have a very uneven surface, over which, at different places, necrotic spots are to be seen from which blood is slowly oozing. To the touch the tumor feels firm and hard, the slightest manipulation causes it to bleed. The glands in the region of the angle of the jaw on the right side are indurated. The patient is deaf in the right ear, but does not complain of pain or noise. On June 13th the patient's urine was examined. It was found to be clear, pale yellow, *urineferous* in odor, acid in reaction, spec. grav. 1008, albumen negative. Microscopic examination revealed a few degenerated squamous epithelium cells. On June

15th, two days later, it was again examined with same results. Examination of the blood showed 95 per cent hæmoglobin, 4,896,000 red blood corpuscles, 6000 white blood corpuscles. The temperature varied from 97° to 99.6° F. Pulse from 60 to 100, and respirations from 16 to 24 per minute.

A small piece was removed from the mass for microscopical examination. The specimen presented along a portion of its surface



a layer of squamous epithelium, beneath which the tissue appeared to be firm and uniform in character and composed of numerous closely arranged cells, the nuclei of which stained deeply in hematoxylin and appeared to occupy most of the cell body. The cells are of fairly uniform size, somewhat larger than lymphocytes. The tissue contains numerous small blood vessels, and many of their walls appear to be composed of the cells already described. In a few places near the surface there is some fragmentation of the

nuclei, associated with slight degeneration. Diagnosis: Small round cell sarcoma of the right tonsil with abdominal metastasis.

On July 5th, about ten weeks (as near as I can ascertain) after the onset of the disease, the patient died from exhaustion.

The autopsy was incomplete owing to the opposition offered by the family of the patient. Dr. Kirk, who made the section, informed me that both kidneys contained the growth, and that the liver was enormously enlarged and congested, but showed no evidence of the sarcomatous condition. Considering the tonsil (so-called) a part of the lymphatic system, that its position is one which exposes it to infection, it is frequently a source of entrance for rheumatic infection, and I believe it is not an impossible source of entrance for the bacillus typhosus. I am lead to the latter belief, because of the frequency of tonsillitis during the initial stage of an epidemic of typhoid, which I had occasion to witness in the United States Army.

If these theories are correct why not look to the tonsil as a site for the entrance of malignant infection into the various organs of the body?

HEAD SECTIONS SHOWING THE RELATION EXISTING BETWEEN THE NOSE AND ITS ACCESSORY CAVITIES.*

BY JOHN W. MURPHY, A.M., M.D.,

Laryngologist and Aurist to the Cincinnati Hospital.

The coronal sections of the head, which I wish to present, were made with the object of more clearly demonstrating the relation, and normal openings of the various accessory cavities of the nose. The sections were made after careful measurements upon the external portion of the head, and at a point where I estimated one of the normal openings of an accessory cavity would be most likely encountered. The sections were made somewhat oblique so as to give me two chances of striking the normal opening. I was fortunate in this respect, since the mouth of the lachrymal canal and the ostium maxillary were both included in my sections. The last section was made to show the middle ear and its adjoining structures. On the right side the attic and mastoid cells are well shown, while on the left the membrana tympani, antrum mastoidea and chain of ossicles, in position, are well shown.

One of the chief difficulties encountered in making sections of the entire head has been to properly preserve and harden all of the tissues so they would not be injured or displaced during the section. When the hardening process was carried on too rapidly the outer portions would become hard before the deeper structures and displacement or tearing would occur at the time of section. This was especially the case with the brain, as its various coverings prevented the preservative from penetrating to the deeper portions. Then too, the shell-like bones of the ethmoid and sphenoid cells were apt to be broken and displaced by any instrument sufficiently strong to penetrate the thick bony covering of the skull.

In formaldehyde we have an invaluable agent for our hardening process and an inexpensive agent in which to keep the specimens for an indefinite length of time without shrinkage or discoloration.

My specimen, an unusually well-formed head of a male, about sixty years of age, was secured while pursuing a course in anatomy under Prof. Waldeyer at the University of Berlin in 1896-7. After the usual injection of the common carotid artery, the head was

* Read at the meeting of the Western Ophthalmologic and Oto-Laryngologic Association, held in Cincinnati, Ohio, April 11-12, 1901.

severed and placed at once in a three per cent solution of Formaldehyde. This solution was changed about once in three months. The specimen was kept in this solution for three years, and by this slow method a gradual and uniform hardening of all the structures, including the brain substance, was secured.

A wooden box was constructed to accurately support the head in an upright position. Lines were drawn upon the box at points where I estimated the openings of the accessory cavities would most likely be encountered. The first openings encountered on the walls of the nose from before backwards are the mouths or valve-like openings of the lachrymal canals in the inferior meatus under the inferior turbinate bones; next comes the ostium maxillary opening into the hiatus semilunaris in the middle fossa; then the infundibular openings of the frontal sinuses; and lastly the anterior and posterior openings of the ethmoidal and sphenoidal cells.

After thorough washing in running water, the head was submerged, crown down, so all of the cavities would be filled with water during the freezing process. The head was then surrounded with three hundred pounds of pounded ice and salt for seventy-two hours, by which time all of the tissues were thoroughly frozen. The skin was then anointed with vaseline to prevent the plaster from sticking, and the head placed in the box, with the face in a slightly oblique position. The box was then filled with a mixture of plaster of Paris, which held the head firmly in position during the section. A very fine saw, about half an inch wide and thirty inches long, after the manner of a cabinetmaker's scroll saw, and designed especially for cranial sections by Dr. C. R. Holmes, was now made to trace the previously sawed lines on my embedding box. The box was then knocked away, the plaster fell off, and my sections were as you see them to-day. Not a bone was torn or displaced during the section. As you can see, the brain is as firm as wax and retains all of its structural relations.

The sections can be freely handled, and I have now been using them for over a year in my clinical teaching, and find them of great assistance in demonstrating to students the intimate relation existing between the nose and its accessory cavities.

In the preparation of the accompanying plates, I wish to acknowledge my indebtedness to Dr. Edward H. Thompson for his painstaking care and skill in the production of the photographic plates, to Dr. F. W. Langdon for his material assistance in naming the various structures of the brain surfaces in each section and to H. W. Weisbrodt, the engraver, for his faithful reproduction of the photographic plates.

PLATE NO. O.

Coronal Sections.—Showing the lines of each section viewed from the right side of the face.

A line drawn tangent to the junction of the upper lip, with the nasal septum, is taken as a point of measurement for the nose.

A line drawn tangent to the supra-orbital ridge is taken as a point of measurement for the eye.

On lines drawn at right angles to these two surfaces, the following measurements are given for each section :

1. The first section is three-fourths of one inch, posterior to the supra-orbital ridge and one inch posterior to the junction of the septum with the upper lip. This section passes through the anterior portion of the frontal sinuses, the equator of the right eye, and the posterior limit of the nasal vestibule.

2. The second section is two inches posterior to the supra-orbital ridge and one and three-fourth inches posterior to the junction of the septum with the upper lip.

This section, on the left side, divides the opening of the maxillary antrum and the mouth of the lachrymal canal.

3. The third section is three and one-fourth inches posterior to the supra-orbital ridge and three and one-fourth inches posterior to the junction of the septum with the upper lip.

This section passes through the middle of the sphenoidal cells and the articulation of the vomer with the sphenoid.

4. The fourth section is four and three-fourth inches posterior to the supra-orbital ridge and four and three-fourth inches posterior to the junction of the septum with the upper lip.

This section passes through the middle-ear, showing the tympanum with chain of ossicles in position, together with the relation of the mastoid cells to the middle-ear.

The auricles were pinned forward during the section so as not to be injured.

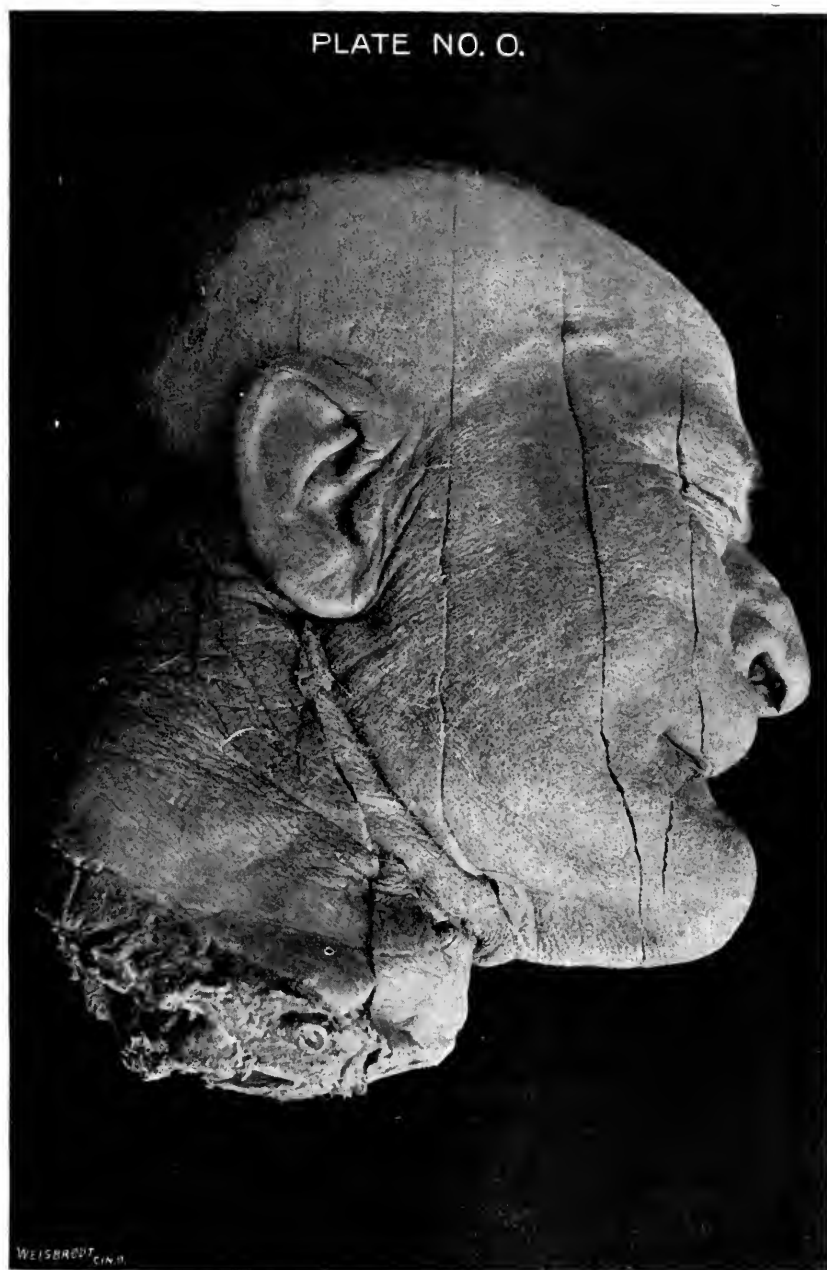


Plate No. O. Coronal Sections: showing the lines of each section, viewed from the right side of the face

PLATE NO. I.

Coronal Section (oblique) viewed from behind, three-fourths of an inch posterior to the supra-orbital ridge, and one inch posterior to the anterior opening of the nasal vestibule, passing through the frontal lobes, the crista galli, the frontal sinuses, the posterior portion of the right eye, and the cartilaginous portion of the septum.

1. The scalp.
2. The unusually thick tables of the frontal bones.
3. The enormously developed crista galli.
4. The anterior extremity of the frontal lobes.
5. The right and left frontal sinuses, separated by an irregular septum, deviating to the same side as the deviating nasal septum. The left sinus is much larger than the right.
6. Base of the nose, showing line of articulation with the frontal bones.
7. The nasal septum, thickened and deviating to the right side, so as to almost occlude the right nostril.
8. The enlarged left nostril.
9. The slit-like opening of the right nostril.
10. Anterior portion of the superior maxillary bone.
12. Section through the globe of the right eye, showing the sclera, ciliary muscle and the crystalline lens in position.
13. Orbital fat, surrounding the globe of the eye.
14. The crystalline lens.

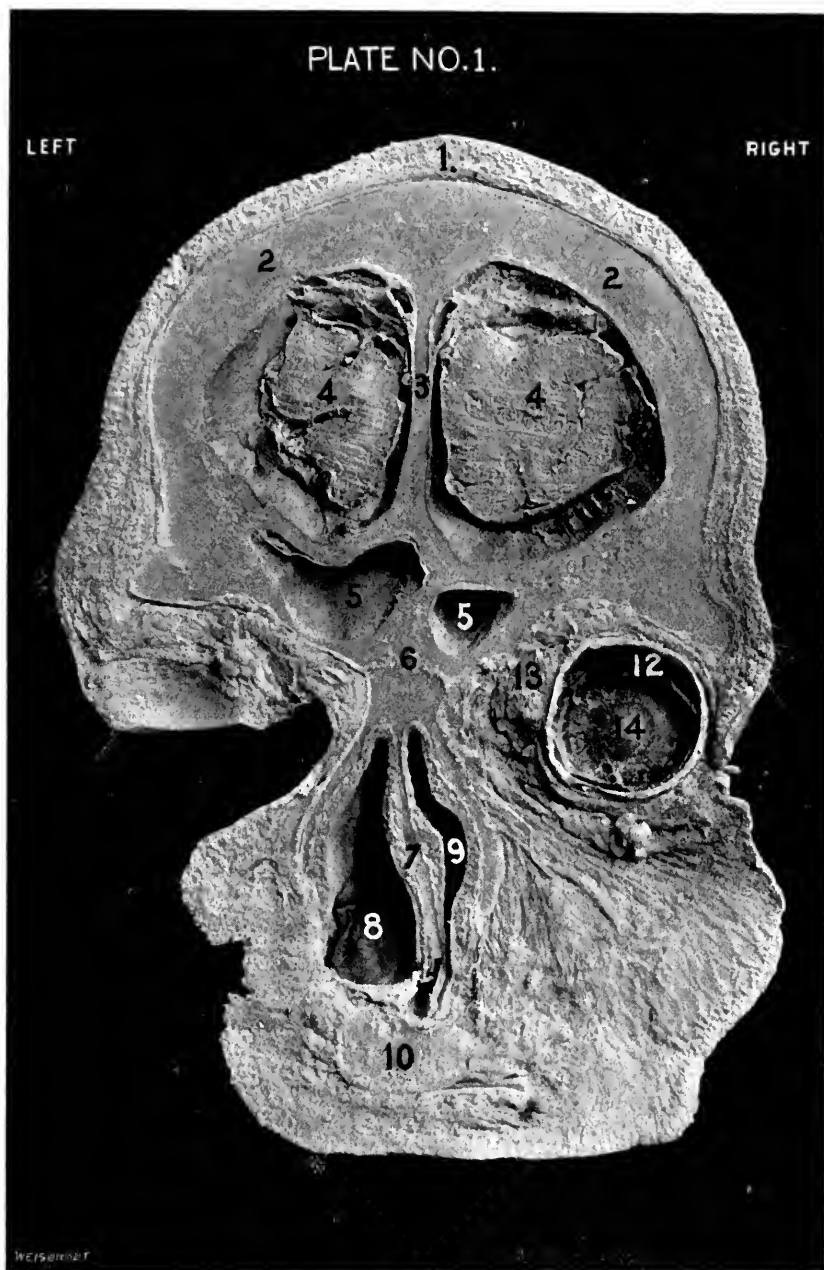


Plate No.1. Coronal Section (oblique) viewed from behind, three-fourths of an inch posterior to the supra-orbital ridge, and one inch posterior to the anterior opening of the nasal vestibule, passing through the frontal lobes, the crista galli, the frontal sinuses, the posterior portion of the right eye, and the cartilaginous portion of the septum

PLATE NO. 2.

Coronal section viewed from before, passing through the frontal lobes, the frontal sinuses, the posterior aspect of the right eye-ball, and the nasal septum.

1. The scalp.
2. The very thick tables of the frontal bones.
3. The enormously developed crista galli, with the beginning of the superior longitudinal sinus, on each side of its upper extremity.
4. Section through the frontal lobes and meninges.
5. The frontal sinuses, separated by a very thick septum.
6. The base of the nose, showing line of articulation with the frontal bones.
7. The nasal septum, thickened and deviated to the right side almost occluding the right nostril.
8. The left nostril very much enlarged, by the septum deviating to the right. The turbinated bodies on the open side are very much hypertrophied, while on the closed side they are atrophied.
9. The slit-like opening of the right nostril.
10. The posterior portion of the globe of the right eye.
12. Detached retina lying in the bottom of the right eye-ball.
13. Adipose tissue surrounding the globe of each eye.
14. Cornea of left eye-ball.
15. The anterior portion of the superior maxillary bone.

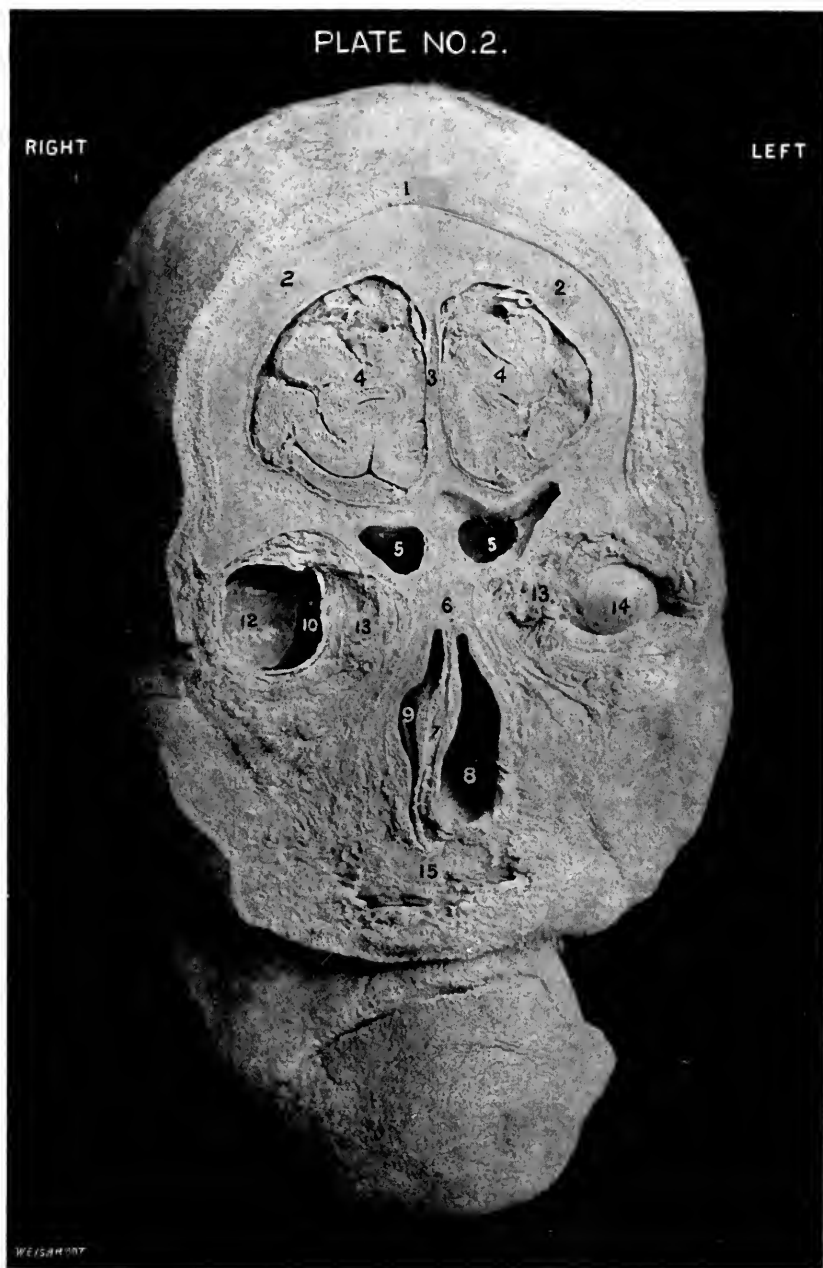


Plate No. 2. Coronal Section viewed from before, passing through the frontal lobes, the frontal sinuses, the posterior aspect of the right eye-ball and the nasal septum.

PLATE NO. 3.

In this section are well brought out the intimate relation existing between the ethmoidal cells and the orbital and cranial cavities; the nasal cavities with the normal position of their spongy turbinated bodies; the hiatus semilunaris on the left side, into which the antrum of Highmore opens; the floor of the right antrum is three-eighths of one-inch lower than the floor of the nose, and the marked mesial dip of the frontal lobes, together with the olfactory fissure and bulbs. (Figure 7).

1. The scalp.
2. The tables of the frontal bones.
3. The superior longitudinal sinus.
4. Section of the cerebrum through the middle of the superior median and inferior gyri.
5. The flax cerebri, separating the two hemispheres.
6. Extension upwards and backwards of the left frontal sinus into the orbital plate.
7. Section of the olfactory bulbs resting on the cribriform plate of the ethmoid, through which filaments extend downward in the mucous membrane of the nose as far as Figure 8, which marks the lower limit of the olfactory portion of the nares.
8. The thickened and deviating septum.
9. The superior turbinate body, under which the upper opening of the hiatus similunaris opens into the middle meatus.
10. A large ethmoidal cell or bulla ethmoidalis, projecting into the middle meatus.
12. The spongy middle turbinated bodies projecting downwards from the under surface of the cribriform plate of the ethmoid. The turbinates on the right, or occluded side of the nose, are much smaller than those on the left, or more open side.
13. The inferior turbinates projecting from the bony wall of the antrum of Highmore.
14. The superior maxillary bone, forming the roof of the mouth, and the floor of the nose.
15. The mucous surface of the upper lip.
16. The mucous surface of the lower lip.
17. The bodies of the inferior maxillary bones, with the symphysis showing between them.
18. The right and left antrum of Highmore, unusually large. The floor of the right antrum is three-eighths of an inch lower than the floor of the nose, while the floor of the left is one-fourth of an inch below the corresponding nasal floor.
19. The ostium maxillare, which was included in the section, on the left side. It opens into the hiatus semilunaris and thence into the middle meatus of the nose.
20. The opening of the ostium maxillare for the right antrum.
21. The upper limit of the inferior meatus.
22. The middle meatus.
23. Section of optic nerve.
24. Section of external rectus.
25. Section of superior rectus.
26. Section of internal rectus.
27. Section of inferior rectus.
28. Junction of vomer with sup. maxillary.
29. The oral cavity.
30. Section of ethmoidal cells.

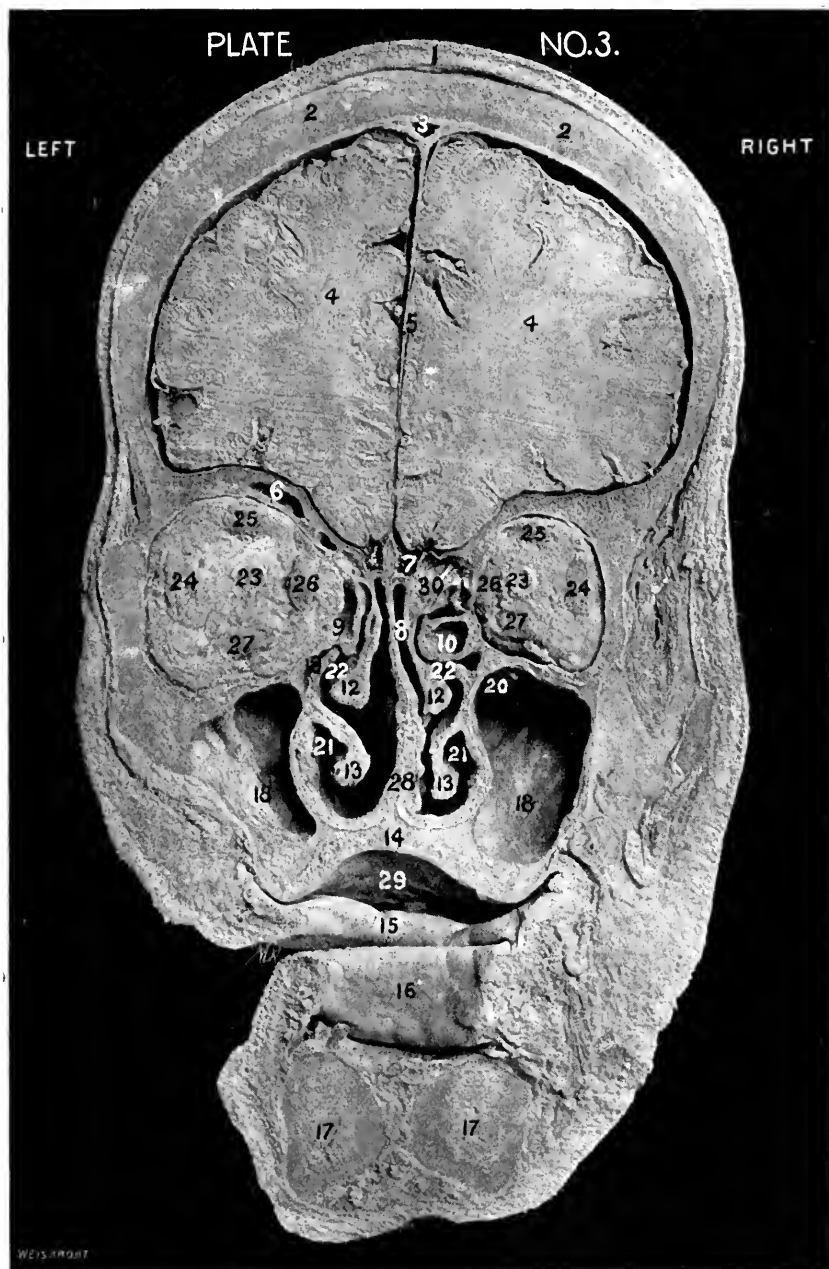


Plate No. 3. Coronal Section viewed from behind, two inches posterior to the supra-orbital ridge, and one and three quarter inches posterior from the nasal opening, passing through frontal lobes, orbital cavity, ethmoidal cells, turbinated bodies and the Antra of Highmore.

PLATE NO. 4.

Coronal Section, viewed from before, two inches posterior to the supra-orbital ridge, and one and three-quarter inches posterior to the junction of the upper lip, with the nasal septum, passing through the frontal lobes, orbital, nasal and oral cavities, ethmoidal cells, spongy turbinates, antra of Highmore, tongue, and bodies of the inferior maxillary bones.

In this section are well shown the mesial dip of the frontal lobes, the olfactory bulbs, and the position and relations of the ethmoidal cells to the cranial, orbital and nasal cavities.

1. The scalp.
2. Tables of the frontal bones—very thick.
3. The superior longitudinal sinus.
4. Section of the cerebrum through the middle of the superior, medium and inferior frontal gyri.
5. The falx cerebri, separating the two hemispheres.
6. The olfactory bulbs, lying upon the cribriform plates of the ethmoid.
7. Ethmoidal cells. The one on the right communicates with the small accessory sphenoidal cell. No. 14 in plate 5.
8. Section of the superior turbinated body.
9. Hiatus semilunaris and ostium maxillare, opening into the middle fossa.
10. Antra of Highmore. The floor of both antra extend below the floor of the nose.
12. The middle turbinated bodies projecting from the under surface of the cribriform plate of the ethmoid.
13. The inferior turbinated bodies projecting from the nasal wall of the maxillary sinus.
14. The thickened nasal septum.
15. The inferior nasal meatus.
16. The middle nasal meatus.
17. The superior nasal meatus.
18. The right and left nostrils.
19. The superior maxillary bone, forming the floor of the nose, and the roof of the mouth.
20. The oral cavity.
21. The cut surface of the anterior portion of the tongue.
22. The bodies of the inferior maxillary bones, with the floor of the mouth between them.
23. Section of the right and left optic nerves.
24. Section of the external rectus.
25. Section of the internal rectus.
26. Section of the inferior rectus.
27. Section of the superior rectus.

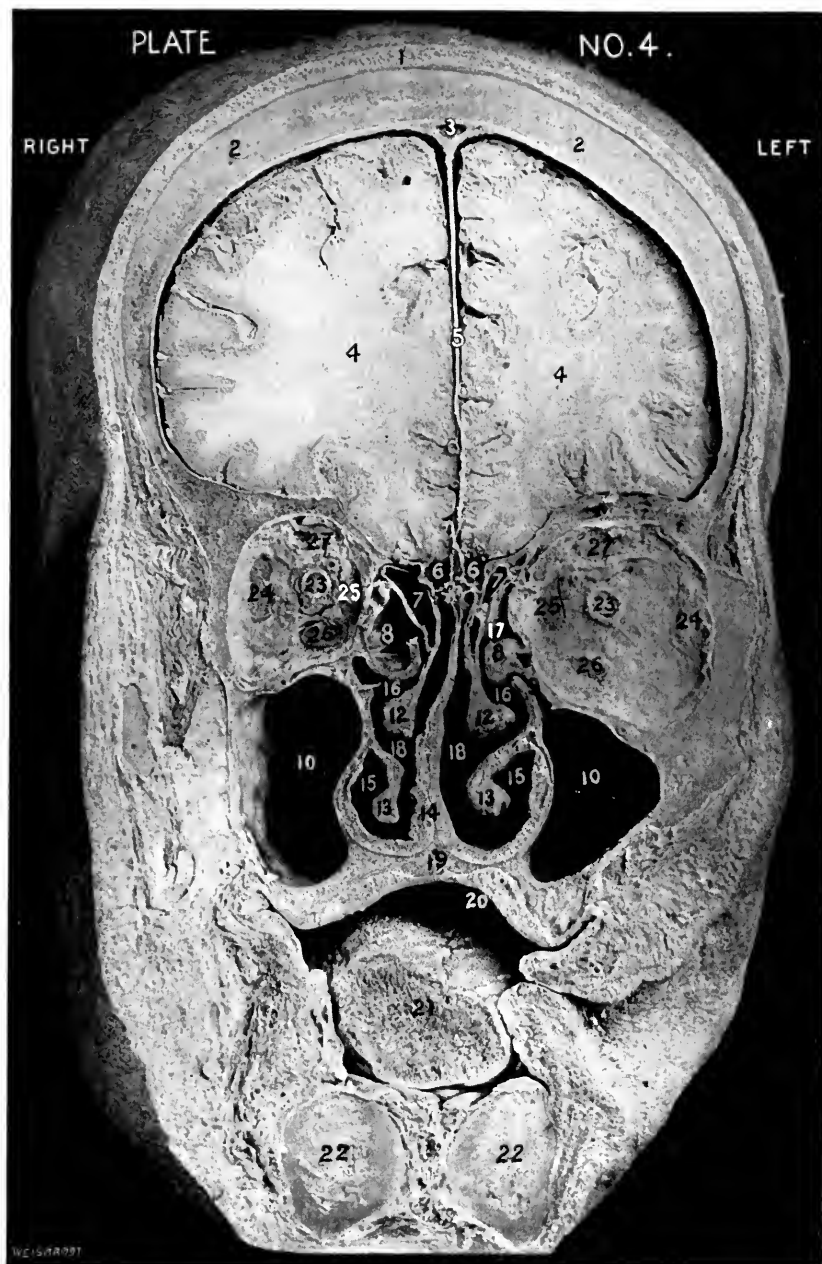


Plate No. 4. Coronal Section, viewed from before, two inches posterior to the supra-orbital ridge, and one and three-quarter inches posterior to the junction of the upper lip with the nasal septum, passing through the frontal lobes, orbital, nasal and oral cavities, ethmoid cells, spongy turbinates, Antra of Highmore, tongue and bodies of the inferior maxillary bones.

PLATE NO. 5.

Coronal Section viewed from behind, three and one-fourth inches posterior to the supra-orbital ridge, and the junction of the upper lip with the nasal septum, passing through the corpus callosum, the lateral ventricles, septum lucidum, the optic thalami, the cavernous sinus, with carotid artery and nerves, the optic chiasma, the uncinate gyrus of the temporal lobe, the sphenoidal cells, the choana, and the middle of the tongue.

1. The scalp.
2. The skull.
3. The superior longitudinal sinus.
4. Section through the temporal lobes.
5. The falx cerebri.
6. The corpus callosum.
7. The septum lucidum, enclosing the fifth ventricle, and bounded laterally by the anterior horns of the lateral ventricles. On the left side just above the figure 13 is seen the Sylvian fissure with its contained vessels.
8. The right lateral ventricle.
9. The left lateral ventricle.
10. The optic chiasm.
12. Section of the temporal lobe. On the right side, to the left of Figure 12 is seen the cavernous sinus, containing the third, fourth, the ophthalmic division of the fifth and the sixth nerves, together with the internal carotid artery.
13. The uncinate gyrus of the temporal lobe. Above Figures 12 and 13 the section passes through the foot of the anterior central (Rolandic) gyri, and the caudal extremities of the three frontal gyri.
14. A small accessory sphenoidal cell with its separate opening communicating directly with the ethmoid in front.
15. The right and left sphenoidal cavities.
16. Posterior end of vomer, or septum.
17. The choana, or pharyngeal openings of the nostrils.
18. The posterior portion of the left middle turbinate.
19. The posterior portion of the left inferior turbinate.
20. The superior maxillary bone forming the floor of the nose and the roof of the mouth.
21. Section of the middle of the tongue.
22. Section of the inferior maxillary bone.
23. Section of the ascending ramus of the inferior maxillary bone.
24. Section of the superior maxillary bone.
- 25 and 26. Section of the temporo-maxillary muscles.
27. Section of the optic thalami.



Plate No. 5. Coronal Section viewed from behind, three and one-fourth inches posterior to the supra-orbital ridge, and the junction of the upper lip with the nasal septum, passing through the corpus callosum, the lateral ventricles, septum lucidum, the optic thalami, the cavernous sinus with carotid artery and nerves, the optic chiasma, the uncinate gyrus of the temporal lobe, the sphenoidal cells, the choana, and the middle of the tongue.

PLATE NO. 6.

Coronal Section viewed from before, three and one-fourth inches posterior to the supra-orbital ridge, and the junction of the upper lip with the nasal septum, passing through the temporal lobes, the corpus callosum, lateral ventricles, the optic thalami, the pineal gland, the sphenoidal cells, the post-nasal space and tongue.

1. The scalp.
2. Section of the skull.
3. The superior longitudinal sinus.
4. Section through the temporal lobes.
5. The falx cerebri.
6. The corpus callosum.
7. Septum lucidum, enclosing the fifth ventricle and bounded laterally by the anterior horns of the lateral ventricles.
8. The left lateral ventricle.
9. The right lateral ventricle.
10. The basilar artery.
12. The pineal gland.
13. The internal carotid artery and cavernous sinus.
14. The uncinate gyrus of the temporal lobe. Immediately above Figure 14, on the left side, is seen the cavernous sinus with its contained vessels and nerves.
15. The right and left sphenoidal cells.
16. The sella turcica.
17. The junction of the bony septum with the body of the sphenoid.
18. The post-nasal opening. On the outer wall of this space is seen the trumpet-like opening of the left Eustachean tube.
19. The posterior wall of the post-nasal space. On its lateral wall is seen the right Eustachean tube.
20. The superior maxillary bone forming the floor of the nose and the roof of the mouth.
21. Section of the tongue near its base.
22. The inferior maxillary bone at angle of the jaw.
23. Section of the ascending ramus of the inferior maxillary bone.
24. Section of the temporal muscles.

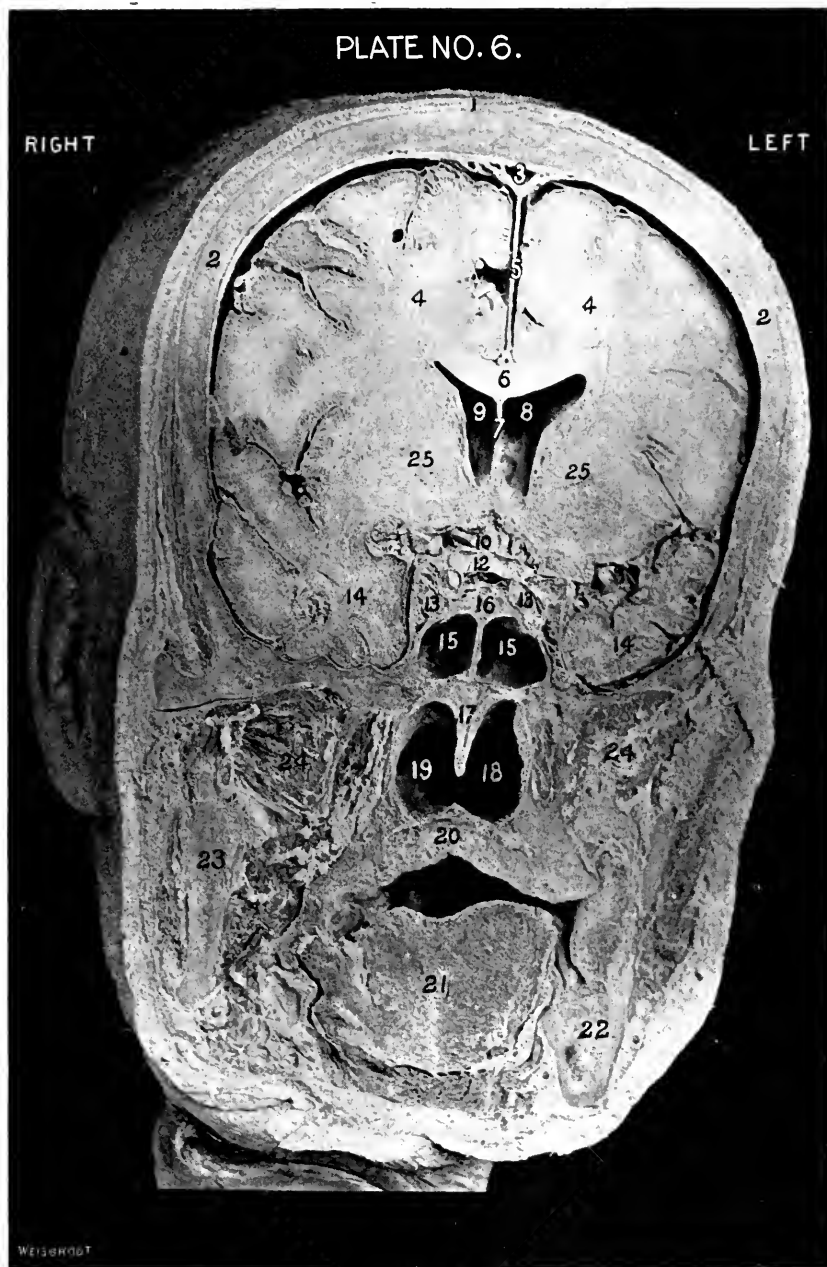


Plate No. 6. Coronal Section viewed from before, three and one-fourth inches posterior to the supra-orbital ridge, and the junction of the upper lip with the nasal septum, passing through the temporal lobes, the corpus callosum, lateral ventricles, the optic thalami, the pineal gland, the sphenoidal cells, the post-nasal space and tongue.

PLATE NO. 7.

1. The scalp.
2. Tables of the parietal bones.
3. The superior longitudinal sinus. On the left of the superior longitudinal sinus is seen a parasinoidal space.
4. Section through the posterior portion of the temporal lobes.
5. The falx cerebri.
6. The posterior horns of the lateral ventricles.
7. The descending horns of the lateral ventricles, each containing its choroid plexus, and between these a section of the corpus callosum, immediately anterior to the splenium.
8. The posterior portion of the corpus callosum.
9. The posterior portion of the quadrigemina, or corpora quadrigemina. The lenticular-shaped body between Figures 8 and 9 is the pineal body or conarium, surrounded by the beginning of the velum interpositum, passing in through the great transverse fissure. On either side of the pineal gland, at its upper surface are seen the veins of Galen (*Venæ Galeni*). At Fig. 7, is seen the Hippocampus Major in the descending cornu of lateral ventricle.
10. Section through the pons. Midway between Figures 9 and 10, in a small flap, which when raised shows the aqueduct of Sylvius, or the *iter a tertio ad quartum ventriculorum*. On either side of this canal are seen the red nuclei, between which the third nerve passes out a little anterior to this section. On either side of Figure 10 are seen the middle peduncles of the cerebellum.
12. A section of lateral sinus, inner wall of which is ossified.
13. The basilar arteries on either side of the oblongata.
14. The mastoid antrum.
15. The middle ear.
16. The mastoid cells.
17. The posterior portion of the Helix.
18. Anterior wall of the external auditory canal.
19. The middle ear with *membrana tympani* and ossicles in position. The head of the hammer is seen in the vault of the tympanum above and to the left of Figure 19.
20. Vestibule of inner ear and portion of oval window.
21. The eighth or auditory nerve coming out at the internal auditory meatus, situated immediately below the flocculus. The facial nerve may also be seen at the same point.
22. Longitudinal section of the internal jugular vein.
23. Longitudinal section of tip of the odontoid process of axis.
24. The articulation between the occipital condyle and the atlas.
25. Section of the internal carotid artery.
26. Section of the external carotid artery.
27. Section of the left internal jugular vein.
28. Section of the right internal jugular vein.
29. The posterior pharyngeal wall.
30. The posterior surface of epiglottis.
31. The thyroid cartilage—ossified.
32. The posterior surfaces of the sterno-thyroid muscles.
33. The tentorium.

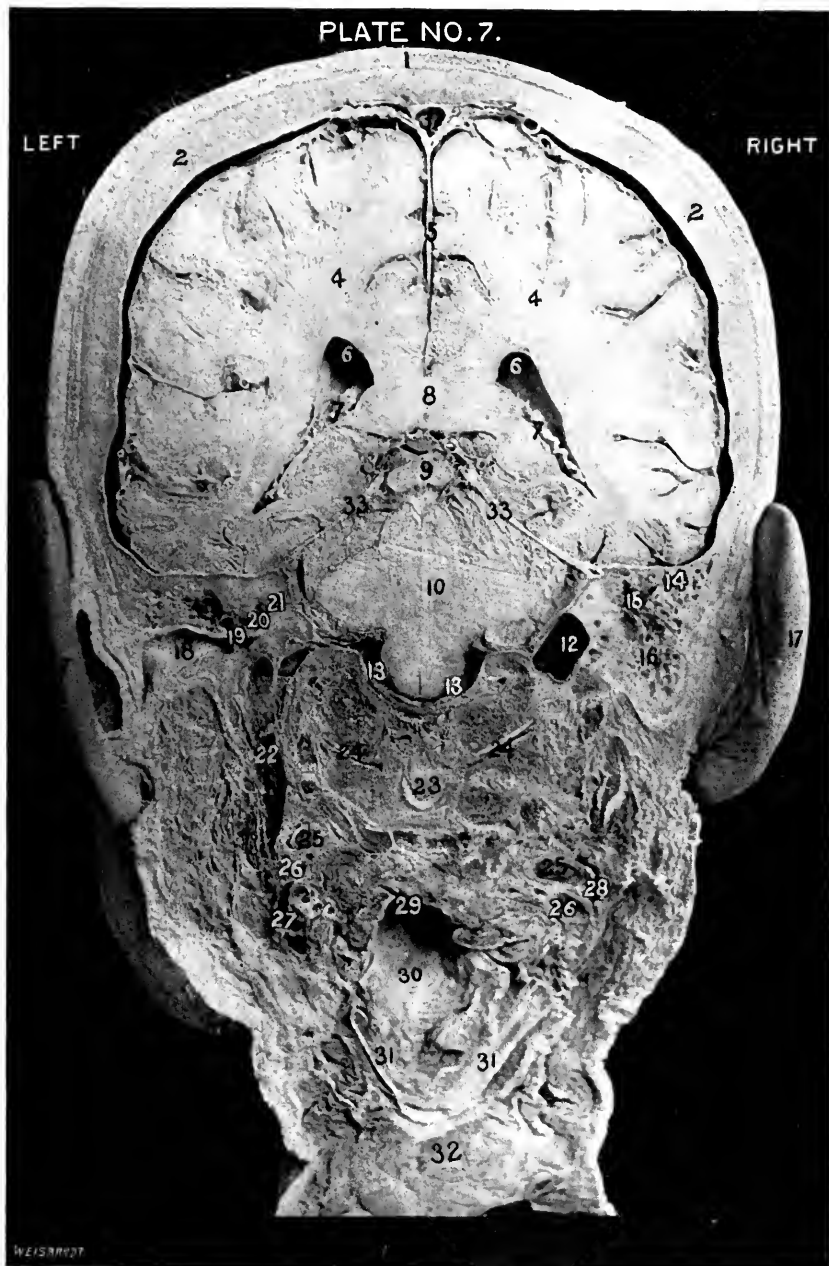


Plate No. 7. Coronal Section viewed from behind, four and three-quarter inches posterior to the supra-orbital ridge, and the junction of the upper lip with the nasal septum, passing through the temporal lobes, the posterior horns of the lateral ventricles, the conarium, the pons, the oblongata, the middle ear, mastoid cells, occipital condyles, and the thyroid cartilage.

PLATE NO. 8.

Coronal Section viewed from before, four and three-quarter inches posterior to the supra-orbital ridge and the junction of the upper lip with the nasal septum, passing through the temporal lobes, the posterior horns of the lateral ventricles, the pons, the mastoid cells and the middle-ear, together with the box of the larynx and thyroid cartilage.

1. The scalp.
2. The parietal bones.
3. The superior longitudinal sinus.
4. The posterior portion of temporal lobes.
5. The falx cerebri.
6. The posterior horns of the lateral ventricles.
7. The posterior portion of the corpus callosum.
8. Veins of Galen—venæ Galeni.
9. Section of the tentorium.
10. Section through the pons. The floor of the fourth ventricle is situated immediately posterior to Figure 10.
12. Posterior wall of the external auditory canal.
13. The vestibule of the inner ear with section of the oval window, together with portion of membrana tympani and middle ear.
14. The basilar arteries on either side of the oblongata.
15. Section of the right internal jugular.
16. The mastoid cells on the right side.
17. The condyles of the occipital bones.
18. The articulation between the condyles and the atlas.
19. Longitudinal section of the tip of the odontoid process of the axis.
20. Section of the left internal carotid artery.
21. Section of the left external carotid artery.
22. Section of the left internal jugular vein. The black space above Figure 22 is a longitudinal section of the internal jugular vein.
23. Section of the posterior pharyngeal wall.
24. Section of the false vocal cords.
25. The posterior wall of the larynx.
26. Section of the true vocal cords.
27. The glottic opening, with the cords in the cadaveric position.
28. The thyroid cartilage—ossified.
29. Section of the greater cornua of the hyoid bone.

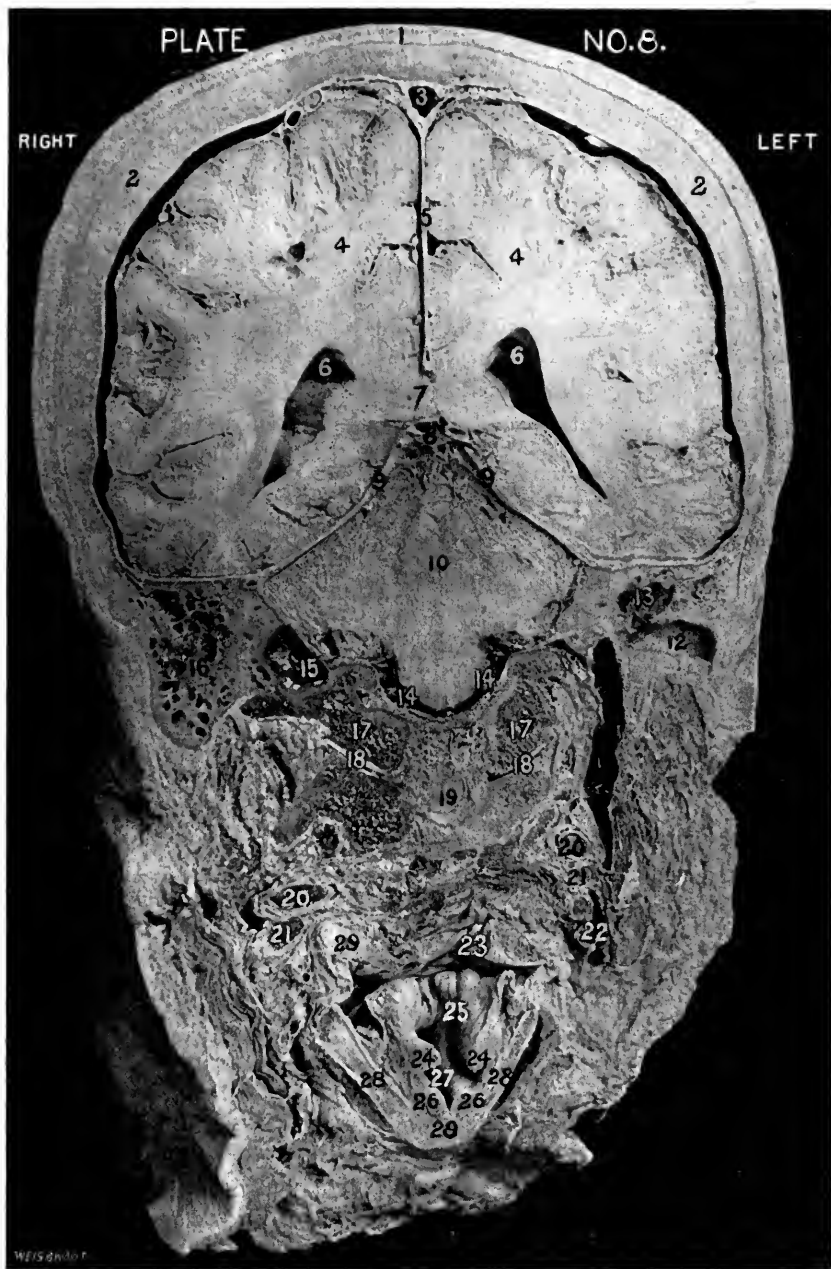


Plate No. 8. Coronal Section viewed from before, four and three-quarter inches posterior to the supra orbital ridge, and the junction of the upper lip with the nasal septum, passing through the temporal lobes, the posterior horns of the lateral ventricles, the pons, the mastoid cells and the middle ear, together with the box of the larynx and thyroid cartilage.

TINNITUS AURIUM.

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That tinnitus is a symptom, and not a disease, is the most obvious of medical truisms. But while it may be dependent upon many and various disorders, both local and constitutional, it is often the sole symptom of which the patient is conscious. To him, therefore, it often assumes the dignity of a disease.

It is also a fact, established by the common experience of otologists, that quite as many patients apply for treatment for the relief of tinnitus as of impaired hearing.

In the experience of the writer, it has seemed in many cases much less difficult to obtain an improvement in the patient's hearing power than to effect the slightest abatement of the subjective noises complained of. The above considerations have led him to look into the recent literature of the subject, hoping to find therein sufficient light to enable him to make at least a rational attempt at diagnosing and treating those cases in which tinnitus is the most urgent symptom.

One of the first difficulties in considering the subject is the adoption of a simple and concise classification of the different forms met with. Obviously the most useful division would be a classification according to the underlying lesions or disorders, if one could be found to which all cases of tinnitus could be referred. While that, in the present state of our knowledge, may not be possible, it would seem that any attempt at such a division, however imperfect, would be justifiable as pointing in the right direction. An attempt, therefore, will be made to consider the subject under the following headings:

1. *Conduction Sounds*, or noises due to occlusion, or impaired mobility of some portion of the sound-conducting apparatus.
2. *Blood Sounds*, or noises produced by the blood current in vessels in or near the ear, and due either to disturbances of the local or general circulation, or to abnormalities in the size, shape or position of the vessels.
3. *Labyrinthine Sounds*, or noises due to alterations—either of increase or diminution—of the pressure within the labyrinth.

4. *Neurotic Sounds*, or noises due to increased irritability of the auditory nerve.

5. *Cerebral Sounds*, or noises due to lesions of the auditory centers in the cerebral cortex.

Conduction Sounds.—This name has been applied by Panse to sounds due to partial occlusion of the external auditory meatus or to impaired mobility of the ossicular chain. He holds that the function of the conducting portion of the auditory apparatus is not only the conduction of sound waves to the organ of hearing, but also the conduction from the ear of sounds which otherwise would act too strongly upon the perceptive mechanism. As supporting this view, he quotes von Tröltsch¹ as saying that "all noises actually rising in or near the ear must necessarily act more strongly on the auditory nerve if the natural outward sound conduction be in any way diminished."

Another way of explaining this form of tinnitus would be to state that there are always present in the neighborhood of the healthy ear sonorous vibrations due to certain physiological processes—*e. g.*, the blood current—which normally do not reach the inner ear; that such vibrations, when they do reach the perceptive mechanism, must do so by bone conduction; that bone conduction is always increased when the mobility of the ossicular chain is impaired; and therefore that sounds accompanying the simpler middle ear lesions are in many cases the result of normal sonorous vibrations, which by reason of increased bone conduction are permitted to impinge upon the end organs of the auditory nerve. Have a vibrating tuning fork held in contact with the median line of the skull, and held there until its vibrations cease to be appreciated as sound. It is still vibrating, but now so feebly that the sound is no longer heard. Now close both ears by a finger pressed in each meatus, and the sound of the still vibrating fork is again distinctly heard; and now also another sound is heard which is produced by the normal blood current in vessels in and near the ear. In other words, we have blocked the natural outward pathway of sound conduction, with the result that vibrations normally imperceptible pass by bone conduction to the perceptive mechanism, and are appreciated as sound.

It would seem that this theory of the causation of tinnitus might be found to apply to certain sounds, for which other causes are sometimes assigned. For instance, it has been frequently noted that when the eyes are tightly closed by strongly contracting the orbicularis palpebrarum muscles, a low, buzzing sound is heard.

This is supposed to be due to a sympathetic contraction of the stapedius, and is commonly spoken of as a "muscle sound." But if we will produce this sound by forcibly closing the eyes, and then compare it with the sound produced by placing a finger lightly in each external auditory meatus, we shall find that the two sounds are very similar in quality and pitch, though the latter is of greater intensity. May not this so-called muscle sound be thought of more correctly as a *conduction sound*, and as due to a temporary interference with outward sound conduction, during the contraction—which lasts but a few moments—of the stapedius muscle?

Since tympanic lesions may be accompanied by a high degree of congestion, and by pressing the stapes inward, may produce changes of the intra-labyrinthine pressure, it is evident that all cases of tympanic tinnitus do not necessarily belong to this class. That is, there may be other causative factors at work.

The outward conduction of sound may be interfered with by anything which occludes the meatus, *e. g.*, cerumen, foreign body, furuncle, etc., or by anything which interferes with the mobility of the ossicular chain, *e. g.*, tubal catarrh with retraction of the drum membrane, tubo-tympanic congestion, fluid effusions within the tympanic cavity, constricting bands binding the ossicles together or to the tympanic walls, etc., etc.

Viewed in this way, it is quite logical to treat these conditions locally and expect the tinnitus to subside as the parts regain their normal condition.

The so-called *blood sounds* may be of arterial or venous origin. They may be dependent upon anatomical anomalies and not upon any pathological condition, in which case they are not to be looked upon as a symptom of disease, and are often not amenable to treatment. The close relation, for example, of the *internal carotid artery* and the *internal jugular vein* to the tympanum is well known. The anterior wall of the tympanum is separated from the internal carotid by a thin, bony plate only, and the tympanic floor is in relation with the jugular fossa, which lodges the bulb of the jugular vein. As an abnormal congenital condition the carotid canal may project into and encroach upon the cavity of the tympanum, and it is not difficult to conceive that any malposition in this direction might give rise to sounds which the patient could not fail to hear. In the tympanic floor, also, dehiscences may exist either as a congenital defect or as a result of an old necrotic process which has undergone resolution. Many such cases have been observed during

surgical operations and in the course of post-mortem examinations. At a meeting of German naturalists a few years ago Dr. Korner,² of Rosstock, presented, among other specimens, a temporal bone showing a fissure in the tympanic wall of the carotid canal. Dr. Dench³ has recorded the case of a young woman upon whom he performed the operation of ossiculotomy. After removal of the ossicles, "a bluish mass was seen in the floor of the tympanum, which proved to be the bulb of the jugular vein, its exposure being due to a defect in the tympanic floor."

These cases are not unique, and are cited simply to emphasize the fact that tinnitus is not necessarily an evidence of disease. They corroborate the statement of Schwartz⁴ that "continuous noises may occur during a lifetime in persons of normal hearing, due probably to anomalies in the course of vessels."

Another variety of *blood sounds*, not dependent upon aural disease, may occur as a result of disturbances in the general circulation, which may be temporary or more or less persistent in character. The more temporary forms are alluded to by Schwartz⁵ who says that "noises in the ears of healthy persons may follow disturbances in the circulation, violent emotions, mental over-exertion," etc. Such cases obviously do not require treatment.

A more persistent form of tinnitus, which we may also assume to indicate circulatory derangement, is that which may accompany visceral disturbances in other parts of the body. It is a well recognized fact that visceral disorders—notably disorders of the pelvic and abdominal viscera—frequently produce aural symptoms. Woakes⁶ explains this on the hypothesis of a nervous relationship between the viscera in question and the labyrinth. He points out that the nerves regulating the calibre of the vertebral arteries, and also of the basilar artery and its branches, including the internal auditory which supplies the labyrinth, come from the inferior cervical ganglion of the sympathetic. The stomach and other abdominal viscera are largely supplied by the pneumo-gastric nerves; and the communication between the vagus and the inferior cervical ganglion is established by means of a fasciculus from the vagus to the ganglion in question. Thus in certain disorders of the stomach, for instance, impulses may be sent by way of the inferior cervical ganglion to the labyrinth, whereby its arteries are caused to dilate. Woakes claims that under such conditions the blood supply to the area involved "may be ten times as great as" under normal conditions. With this theory in mind it is no tax upon our credulity to accept the statement that "cases

of tinnitus from constipation, subacute gastritis and pathological conditions within the pelvis are of common occurrence."

In such cases it would be logical to expect the tinnitus to yield to treatment directed against the existing visceral disorders.

Patients with chronic endocarditis form another class who occasionally suffer with tinnitus. When with chronic valvular disease, a murmur heard objectively at the base of the heart, is transmitted to the vessels of the neck, an accompanying tinnitus may be clearly due to transmission of the cardiac murmur. Strumpel⁷ in writing of aortic regurgitation speaks of cases in which "by applying a stethoscope lightly over the femoral, the brachial, and often over the radial and ulnar arteries, a marked valvular sound" is heard. It would be surprising if such a murmur were not transmitted also to the patient's organ of hearing. A peculiarity of this variety of tinnitus is the fact that in some cases the sound heard by the patient may be heard also by the physician through the otoscope. As illustrating this statement may be mentioned the case of Spirig⁸, cited by Panse. His patient, a sufferer from aortic regurgitation, was troubled by subjective noises, at first pulsating, later becoming continuous. Objectively it was heard through the otoscope on the right side, a rhythmic, blowing sound; and a similar sound was heard through the stethoscope over the aorta, right carotid, subclavian and brachial arteries. Another variety of subjective blood sounds which in rare cases may be heard by the physician through the otoscope is that which occurs with intra-cranial aneurysms. The basilar and internal auditory arteries are the vessels said to be most often affected. Excluding, then, a transmitted cardiac murmur, a pulsating noise synchronous with the pulse, heard subjectively and objectively in both ears, would suggest aneurysm of the basilar artery; if heard only in one ear, the inference would be of aneurysm of the corresponding internal auditory artery. Obviously, in such cases the tinnitus is not amenable to treatment except in so far as cardiac and nerve sedatives may lessen its intensity.

Blood sounds are usually of low or medium pitch, and are diagnosed by their character and by the exclusion of other causes. Pulsating noises are of arterial origin, whereas venous sounds are uniform or non-pulsating in character.

Arterial sounds, again, may originate either in the neighborhood of the tympanum, or within the labyrinth; *i. e.*, they may come from the internal carotid, or tympanic branches of the external carotid—or from the internal auditory artery which supplies the

labyrinth. Compression of the common carotid artery will in some cases temporarily relieve, or modify, pulsating noises of tympanic origin. The internal auditory artery, which supplies the labyrinth, is a branch of the basilar artery, which is formed by the junction of the two vertebral arteries. Dundas Grant⁹ claims to have demonstrated upon the cadaver that the vertebral arteries may be controlled "by pressure exerted in the little hollows behind and a little below the mastoid processes." He claims also to have tested this again and again with patients having tinnitus from salicylate of soda, a drug known to produce labyrinthine hyperemia, and that in most cases the noises were checked or diminished. Here, then, we have a possible means of distinguishing tympanic from labyrinthine blood sounds, and pressure exerted alternately on the common carotid and vertebral arteries may enable us to locate the trouble.

There should also be mentioned a *venous blood sound*, which sometimes occurs with chronic or long continued anemia. It is a low, continuous hum, supposed to be due to the altered condition of the blood in its passage from the sinus into the bulb of the jugular vein. This sound is probably somewhat analogous etiologically to the haemic bruit which in anemia is sometimes heard objectively over the large veins of the neck—the so-called *bruit du diable*. The diagnosis depends upon the character of the sound, the absence of tympanic disease; exclusion by functional tests of labyrinthine disease; and evidences of anemia as shown by the general symptoms and examination of the blood. Obviously the indications would be for iron, arsenic, tonics or any treatment looking to the restoration of the blood to its normal condition.

Labyrinthine Sounds.—Most observers will agree that no single symptom is more constantly present in all forms of acute labyrinthine disease than tinnitus. In explanation of this we should bear in mind:

1. That the auditory nerve receives and transmits impressions that are appreciated as sound, not only in response to sonorous vibrations, but may also do so as a result of any undue irritation of its terminal fibres, *e. g.*, mechanical or electrical irritation, etc., etc.
2. That these terminal fibres are among the most delicately sensitive structures in the body, and that wherever distributed in the labyrinth—whether in the basilar membrane or the maculæ acusticæ of the utricle and saccule—they are everywhere enveloped by the labyrinthine fluids which act as a supporting medium.

Remembering, then, the finely balanced pressure relationship between the end organs of the nerve and the surrounding structures, it is not surprising that any marked variation of the pressure within the labyrinth—whether of increase or diminution—may produce changes in the condition of the nerve so appreciable as to act thereon as a veritable mechanical irritant. Gruber¹⁰ has observed that either hyperemia or anemia of the brain may be accompanied by tinnitus. In such cases it seems reasonable to assume that the congestion or anemia has extended to the labyrinth, for it is hardly conceivable that any ordinary variations in the cerebral blood supply could sufficiently disturb either the auditory nerve trunk, or the auditory centers in the cerebral cortex, to produce subjective sensations of sound. Nearly all writers on the subject, including Grant,¹¹ Politzer¹² and Gruber¹³ himself, include congestion and anemia of the labyrinth among the causes of tinnitus. George P. Field¹⁴ called attention over twenty years ago to the fact that very “slight variations either of increase or diminution in the pressure on the delicate structures (within the labyrinth) may give rise to severe tinnitus.” He pointed out that “anemia and hyperemia are powerful agents in modifying the pressure equilibrium” of the labyrinth. It seems to the writer that the importance of this view is not generally appreciated, and that a large proportion of all cases of labyrinthine tinnitus may be traced to alterations of labyrinthine pressure. In support of this view we find that in those pathological conditions known to produce great alterations in the pressure within the labyrinth, tinnitus is always a marked symptom; and, conversely, that in nearly all cases of tinnitus which are traceable to the inner ear there are usually sufficient grounds for assuming a disturbance of intra-labyrinthine pressure. Thus in labyrinthine apoplexy or hemorrhage, which, of all conditions, most markedly increases labyrinthine pressure, tinnitus of distressing type is one of the most constant symptoms. After severe hemorrhage, on the other hand, when the patient lies in a condition bordering on collapse, and all the tissues of the body are suffering from a withdrawal of blood, tinnitus is said to be usually present, and here we may assume the pressure within the labyrinth to be below par.

The tinnitus following the ingestion of certain drugs is most easily explained by assuming a disturbance of labyrinthine pressure. Thus experiments upon animals killed after frequently repeated doses of quinine, salicylic acid, salicylate of soda, etc., have shown marked labyrinthine congestion to be present—congestion sufficiently pronounced to have markedly increased labyrinthine pressure. Another

drug known to produce tinnitus is amyl nitrate, and here the effect so rapidly follows the cause that it is possible to explain it only in one of two ways: viz., either

a that by reason of the increased flow of blood through the part, the sonorous vibrations normally produced by the blood current are exaggerated to the point where they are appreciated as sound; or

b that the sudden increase in the volume of blood within the labyrinth so increases the pressure on the end organs of the nerve as to induce therein a condition of acoustic irritability. The latter explanation seems the more plausible.

Granting, then, that alterations in the pressure within the labyrinth may cause subjective sounds, and that congestion usually means increase of pressure, we at once think of numberless conditions upon which labyrinthine congestion may depend: *e. g.*

1. *Tympanic Lesions*, in which local congestion extends through anastomotic channels to the labyrinth.

2. *Conditions Tending to Produce General Venous Congestion*: *e. g.*, chronic cardiac lesions with failing compensation, chronic nephritis, hepatic cirrhosis, chronic anemia, pulmonary phthisis and emphysema, etc., etc.

Politzer mentions tumors of the brain impeding the venous flow from the ear; thrombosis of labyrinthine vessels. Gruber mentions "tumors in the cervical region, especially strumous swellings pressing upon the large veins."

Intra-labyrinthine pressure may be diminished after exhausting diseases, in chlorosis, in acute anemia, after severe hemorrhages, after parturition, with embolism of the internal auditory artery, embolism or aneurysm of the basilar artery, etc., etc.

It may be argued that the symptoms of labyrinthine anemia are due to retrograde changes in the auditory nerve rather than to diminished labyrinthine pressure. That such is not the case in the more acute cases is evidenced by the fact that the symptoms are often present before such secondary nerve changes could possibly have taken place.

The following recorded cases are interesting and throw some light on the influence of diminished labyrinthine pressure in the causation of aural symptoms. Abercromby's case,¹⁵ cited by Politzer, is that of "a man, aged thirty, debilitated by an affection of the stomach, who was deaf while standing or sitting, but could hear quite well while in the horizontal position."

Lermoyes¹⁶ records the case of a man, aged forty, diabetic, suffering from tinnitus, impaired hearing and vertigo. After meals

there was a sensation of fullness in the frontal region, but the aural symptoms became less marked. Lermoyes inferred from this that the symptoms were due to labyrinthine anemia. This was corroborated by the administration of nitrite of amyl, which increased the power of audition and lessened the tinnitus. Dundas Grant states that he has frequently noticed in the cases of anemic patients suffering from tinnitus, that the noises were checked or reduced in intensity when the patient assumed the horizontal position, and this he considers a point of diagnostic importance.

It is, perhaps, unusual, however, to obtain such quick response to measures tending to increase labyrinthine pressure; and certainly such reactions are not always necessary to a correct diagnosis. As illustrating this, a case recently observed in dispensary practice may be cited, in which a girl of sixteen complained of a non-pulsating noise, of high pitch, heard in both ears; more noticeable during the day than at night; hearing not noticeably impaired; bone conduction slightly diminished; no marked abnormalities in tubes or tympanum. Her general appearance was anemic, and blood examination showed diminished percentage of hæmoglobin.

In such a case a tentative diagnosis might at once be made of tinnitus due to anemia, and the noise regarded as a labyrinthine sound due to diminished pressure.

Much more could be written upon this subject than the scope of this paper will admit. Enough has been said, however, to suggest the large number of cases in which the tinnitus can be traced to disturbances of labyrinthine pressure.

This view of the origin of labyrinthine noises is of practical value in that it helps to remove these cases from the domain of empirical medicine, and places at our disposal a large number of remedies which may be employed rationally for their relief.

Neurotic Sounds.—Those subjective noises may be classed as neurotic sounds which depend upon some abnormal condition of the auditory nerves. The tinnitus in most of these cases is to be regarded as a pure neurosis, *i. e.*, it is dependent upon a functional disorder of the nervous system in which the auditory nerves share and sympathise. They may present no evidence of organic disease, yet are shown to be in a condition of increased or abnormal irritability.

This condition of acoustic hyperesthesia may be produced by toxic matters circulating in the blood, which act as irritants upon the

auditory nerves. In this way may be explained the temporary tinnitus occurring in some cases of chronic Bright's disease; also the tinnitus occurring occasionally without evidence of tympanic disease in the course of acute infectious diseases.

The most characteristic cases of *neurotic tinnitus*, however, are found in patients suffering from *neurasthenia* or *nervous exhaustion*. In the diagnosis of these cases the process of exclusion naturally plays an important part. Thus, on examination of the patient, there may be found no disorder of the general circulation, no evidences of disturbed labyrinthine pressure, no visceral disorders which might affect the ear reflexly. Examination of the ear may reveal nothing abnormal within the meatus or tympanum, or, as is more common, a tympanic lesion being present, its correction does not result in relief of the tinnitus. Such negative results should suggest, at least, the possibility of a functional nervous disorder.

Careful questioning next brings out the fact that the noise is made worse by bodily or mental fatigue; thus, it may be absent or hardly noticeable in the morning, after a night's rest, but reappears or becomes distressing as the day advances.

On functional examination, the hearing may at first seem nearly or quite normal. The tone limits are well maintained; lower tone • limit normal, upper tone limit unchanged, or may be raised. For certain sounds—usually the higher notes of the musical scale, and such sharp sounds as are produced by the watch and acumeter—the hearing may be abnormally acute; *i. e.*, those sounds may be perceived further than the normal hearing distance.

But while the patient's hearing power may be normal, or even hyperacute at certain times, it will usually be found to show great variations, and to suffer rapid diminution as the patient becomes fatigued. Thus the hearing power may be very much better in the morning than in the late afternoon after the fatigues of the day.

It is also characteristic of these cases (Dench¹⁷) that the patient may hear very well when conversing with one person, but with great difficulty when engaged in general conversation, the mental effort necessary to this attempt resulting in fatigue, which quickly reacts upon the auditory nerves.

Dundas Grant¹⁸ has recorded some interesting cases of tinnitus due to nervous exhaustion. Having excluded tympanic lesions and the more usual constitutional causes, he made careful inquiry into the patient's habits, and in many cases elicited a history of overwork, prolonged anxiety, alcoholism, dissipation, sexual ex-

cess, or of some mode of life logically leading to nervous breakdown. Following up this clue, he found on functional examination marked hyperacusis—a vibrating tuning fork held opposite the patient's ear being heard twice the normal period of time, and the watch-tick being heard in some cases "across the room." In many of these cases the tinnitus was relieved only by regulation of the patient's life, and by treatment appropriate to his nervous disorder.

Dana¹⁹ places neurasthenia among the chief factors in the causation of tinnitus. He defines neurasthenia as a "functional nervous disorder, which is characterized by an excessive nervous weakness and nervous irritability, so that the patient is exhausted by slight causes, and reacts to slight irritation."

With this definition in mind, it becomes evident that the aural symptoms are the logical results of the disease; that the tinnitus and hyperacusis are due to the "nervous irritability," while the variations of the hearing power under the influence of fatigue are due to the "nervous weakness." It is important to differentiate between cases of chronic neurasthenia in which the disease is more or less inherited, or at least the result of some inherent weakness of the nervous system, and those cases of acute nervous exhaustion which result from overwork, dissipations, excesses, etc., etc. For while the symptoms of the two conditions are very similar, the prognosis and treatment are quite different. In the chronic form the prognosis is of recovery after slow and tedious convalescence, with marked tendency to recurrence; whereas in the acute form the recovery under proper treatment is often prompt, complete and permanent. The treatment of chronic neurasthenia may require abstention from business, absolute quiet, enforced rest, and minute attention to the digestive functions, this treatment to be persisted in for a period of months, or even longer. In the acute form of nervous exhaustion following overwork, mental strain, etc., the treatment is much simpler, viz.: removal of the causes; regulation of the mode of life; sufficient sleep; abundant exercise in the open air; tonics, etc. This plan of treatment often results in rapid and complete cure. The differentiation is based largely upon the history; *e. g.*, rapid or gradual development, history of former nervous attacks; recognition of exciting cause, etc.

It is probable that there are many cases of tinnitus of mixed origin in which the neurotic element is masked by other causative elements more on the surface; *e. g.*, a tympanic lesion, tubal catarrh, etc. It is the opinion of the writer that cases of tinnitus

belonging, at least partially, to this class are far more common, even among the laboring classes, than is usually supposed. For while neurasthenia is commonly supposed to be a disease to which brain workers and so-called upper classes are particularly prone, we have Dr. Dana's authority for the statement that sufferers among laborers and artisans are by no means uncommon.

On making functional tests at the clinic of Dr. Dench at the New York Eye and Ear Infirmary, and also at the University Bellevue Hospital Clinic, the writer has repeatedly had the following experience: having ascertained by experiment the distance at which a patient could hear and correctly repeat whispered speech, his hearing power at this distance has seemed suddenly to be lost while the testing was in progress. It then became necessary either to lessen the distance between himself and the patient, or to stop the tests, allowing the patient a few moments' rest, after which the maximum distance of audition as originally established could again be demonstrated.

This phenomenon he has come to regard as an evidence of neurasthenia as one of the elements in the causation of the patient's trouble.

Cerebral Sounds, or sounds due to irritation of the auditory centers in the cerebral cortex, require but brief notice in a paper of this kind.

This form of tinnitus is not very common in otological practice, and is of interest as much to the neurologist as to the otologist.

Most authorities agree that complex or elaborated sounds, *i. e.*, sounds taking the form of voices, tunes, distinct words or sentences, are apt to be regarded as of cerebral origin.

The subjective noises which epileptics experience as a warning of impending attacks must also be regarded as due to a central lesion; and it is perhaps important to recognize this premonitory symptom from the fact that its presence is thought to bear somewhat on the prognosis of epilepsy, and to be of ill omen. Powers²⁰ refers to the fact that "epileptics with such an aura are in greater danger than others of becoming insane." The hearing of complex or elaborated sounds is also believed by many to carry with it an unfavorable prognosis. While it is generally believed that the hearing of elaborated sounds points to irritation of the cerebral auditory centers, there are others who hold further that this symptom is an evidence of mental instability. Thus Gruber²¹ states that "patients who hear human voices, words, conversations,

etc., are either mentally diseased, or become so later." It seems hardly justifiable, therefore, to regard such subjective phenomena as aural symptoms, and as otological text books and literature throw little, if any, light on the proper method of treatment, it would seem to be for the best interests of such patients to refer them to a competent neurologist.

Before leaving the subject, a few words, somewhat in the way of recapitulation, may have some bearing on the diagnosis of the different forms of tinnitus met with.

In our search for the cause, we have the following sources of information to draw from:

1. Evidences of disease in any portion of the conducting apparatus as shown by physical examination.
2. History of the case, and character of the sound, as described by the patient.
3. Results elicited by careful functional examination.
4. Evidences of disease in other parts of the body, particularly as to the presence of digestive disorders, circulatory disturbances, blood dyscrasias or disease of the nervous system.
5. Effect of certain drugs, either in relieving or aggravating the tinnitus.

The importance of a careful physical examination of the ear becomes evident from the fact that any appreciable lesion in any portion of the conducting apparatus must act at least as a contributing cause in the production of tinnitus, whatever the character of the sound and whatever the chief factor in its causation may be.

From the patient is learned the character of the noise—whether unilateral or bilateral, simple or elaborated, constant or intermittent, pulsating or uniform, of high or low pitch.

The importance of the pitch depends upon the fact that, generally speaking, low sounds suggest tympanic and high sounds labyrinthine involvement. The pitch is best determined by holding a vibrating tuning-fork of 256 D. V. opposite the patient's ear and requiring him to decide whether the subjective noise is higher or lower in the musical scale, according to which it may be classed as a high or low sound. Further than this, the determination of the exact pitch has not been demonstrated to be of any practical value. It is also of importance to learn whether the noise varies in intensity, at what hour it is most noticeable, how it is influenced by physical exercise, rest, ingestion of a full meal, etc., etc.

The length of time during which the tinnitus has been present is also of some importance, since tinnitus of purely tympanic origin rarely persists very long; while a subjective noise persisting constantly from childhood to adult life might suggest the possibility of anomalies in the course or position of vessels, etc., etc.

Of still greater diagnostic value are the reactions to functional tests. Thus elevation of the lower tone limit suggests tympanic disease; whereas lowering of the upper tone limit points to labyrinthine disturbances. Bone condition is also of diagnostic value, increase pointing to tympanic, and diminution to labyrinthine disorder.

With tinnitus confined to one ear, Weber's test, if lateralized to the same side, would suggest tympanic trouble; whereas if lateralized to the opposite side, the inference would be of labyrinthine disturbance. In other words, the same tests which would aid in locating the cause of an impairment of hearing, may be used in our search for the lesion upon which tinnitus depends.

But while the physical and functional examination of the ear may give clear enough indications in tinnitus of purely aural origin, there are also many cases in which they are of service only in their negative results, which direct the attention away from the ear in the search for the underlying cause. In such cases the most thorough physical examination and most searching inquiry into the patient's general condition may be necessary—all the organs of the body being looked to for evidences of disease, and each slightest symptom being weighed as a possible factor in producing the patient's trouble.

Obviously, no single plan of treatment will ever be found applicable to all the different forms of tinnitus; and the results of treatment must always be proportionate to the thoroughness of the search for the underlying cause.

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THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

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(Continued from page 362.)

THE REFORMATION AND THE DIFFUSION OF MEDICAL SCIENCE.

We have seen the Roman Pontiffs in conflict with the temporal sovereigns of Europe. We have noted the Renaissance of learning and the great anatomical discoveries which it produced. The princes of Italy, and at first the popes, fostered the advance of original investigations in science, but Buckle perhaps includes them in his remark concerning courtiers. "They are a lazy and feeble race, who, from the frivolity of their habits, are, under ordinary circumstances, predisposed to superstition and prepared to believe whatever the wisdom of their fathers has transmitted to them." Their transient enthusiasm for anatomy would have led to little had it not become a serious pursuit at the universities. The Italian dukes were soon involved in the contests between the popes and the emperors, and in the rude conflicts of the times many of the petty courts perished, as did that of Ferrara (1598), the dukedom of the Este's, the shelter and for years the prison of Tasso. Under the roofs of these little palaces, the scenes of intrigue, murder and tyranny, even in the shadow of the walls of the Vatican itself, there frequently existed a contempt for the tenets of the church, and so long as the innovations were confined entirely to the intellectual activities of the favored few, there was no interference with the immense strides made by them in the arts and sciences. Soon, however, it became evident that this progress was interfering not only with the temporal power of the church, but was undermining that spiritual authority among the masses upon which the former rested. The papal bull of Clement VII (1542) named six cardinals for the more thorough exercise of the Inquisition in Italy. Among them was Cardinal Caraffa, its most zealous advocate. He became Pope Paul IV in 1555. Having failed in driving away the Spaniards, he began that policy in the States of the Church which quickly drove the sciences, and eventually the arts, out of Italy. "He frequently allowed days to pass by which had been appointed for the Segnatura or the Consistorium, but never the Thursday on which the Congregation of the Inquisition was assembled before him. * * * He

The Inquisition.

gave it the gruesome privilege to employ torture also for the detection of accomplices. He lived and strove for his reforms, made laws, imprisoned, excommunicated and held auto-da-fe's."* He originated the Index Expurgatorius in 1559. A hundred years after the discovery of a new world to which the persecuted might flee, one of his successors inaugurated his pontificate by the pursuit and arrest of Bruno, "not only as a heretic, but as a heresiarch who has written some things which concern Religion and which are not seemly." Seven years later (1600) they burned him as Calvin fifty years earlier had burned Servetus, both ecclesiastical adversaries being anxious to thus supply "that protection against error which the spiritual classes are always eager to afford." (Buckle.) The Protestant believed in his own infallibility quite as firmly as his opponent believed in the infallibility of the Pope. When they could not catch a heretic they went out and burned a witch.† About this time (1580) Montaigne made the sententious remark: "C'est mettre ses conjectures a bien haut prix, que d'en faire cuire un homme tout vif."

Index Expurgatorius.

Galileo did not think it worth while to be cooked for facts which could take care of themselves and could not in any event be long suppressed, but on his bended knees they made him (1633) renunciate the truth as he knew it. One soon grows weary of reading of such senseless brutality, and there is little consolation to be derived from the thought that many were burned who were quite as ready to kindle fagots for others. It was not only the Church desperately struggling to retain its influence over the minds of men which did much to drive original investigation in Science out of Italy, but it was the ruinous policy of the Papal court trying to fill its leaking treasury which mightily contributed to the same end. "It is well known that the art of printing flourished at Venice at the beginning of the sixteenth century, but through the regulations of the Curia it gradually dwindled into insignificance. They never ceased in Rome to forbid the publication of books." (Ranke l. c.) Besides the more or less respectable motive of stamping out heresy, a more worldly and contemptible tendency was exhibited, which was not edifying to the Venetians. Books forbidden by the Inquisition to be published at Venice were issued from the presses at Rome

Decline of Commerce and of the Arts and Sciences in Italy.

* Ranke's "Geschichte der Papste," Buch III.

† The executions of witches during six preceding centuries were probably not as numerous as took place during a single decade of the fifteenth or sixteenth centuries. After this the practice rapidly declined, being longest popular in Calvinistic Scotland, though the last witch was burned in Switzerland in 1782. Lecky: "History of the Rise and Influence of the Spirit of Rationalism in Europe," Vol. I.

owned in part by cardinals active in issuing the Inquisitorial restrictions. They laid their blundering hands on the delicate fabric of Italian commerce. Restriction of trade and an iniquitous meddling tariff drove the sails of Venice and Genoa from the Adriatic and the Mediterranean, as it has kept our own from the Atlantic and the Pacific. What the interminable and devastating Italian wars at the beginning of the sixteenth century failed to do, the blind interference of the Church with the channels of thought and the channels of trade finally accomplished. The very wars of Italy, with which indeed the whole of Europe was convulsed as an indirect result of the birth of new ideas, were themselves instrumental in carrying civilization and enlightenment to the benighted shores of Britain and the opulent cities of Flanders. The great Paré learned his anatomy at Paris from Sylvius, the preceptor and later the enemy of Vesalius. Although for several centuries the University of Paris had flourished and anatomy had been taught there, it was in the army of Francis I that Paré obtained that experience which led to the great services he rendered surgery. Vesalius, born at Brussels, taught anatomy in Italy, but following the wide travels and the extensive expeditions of the great Emperor Charles, he came into contact with all the civilized centers of population on the continent. Thus and through the channels of commerce was the knowledge and the new thoughts of the Italian Renaissance spread broadcast over the face of Europe. Thus was a welcome prepared at Paris, Oxford and Leyden for the arts and sciences soon to be driven from Italy by dominant theology just as they had been more effectually driven from Alexandria and Constantinople. Learning, of course, was never entirely banished from Rome. "Out of all the academies which arose from year to year one or two were devoted to science, as, for instance, to botany, although without any results as to original research, but all the others, with singular names, devoted themselves to poetry and oratory." (Ranke l. c.) After 1600 the arts also became more dilettantism. The soul, the spirit had flown and the ambition of the ecclesiastics and the nobles, directed by bad taste, led even to the lamentable devastation of the few remnants which had remained from the glories of Ancient Rome. One must not forget the services rendered the medical art by Baglivi and Sanctorius and the Italian School, but, in spite of these, the leadership in Medicine passed away from Italy at the close of the sixteenth century.

Leyden erected, in 1574, within its walls a university as a trophy of victory over King Philip and his mighty generals in the Netherlands. Amidst the barren hills of Germany, Luther absorbed from the

instincts of his race that stubborn freedom of thought and independence of action which stemmed the tide of subservience to some of the doctrines and practices of the Church. Paracelsus, a drunken mountebank, but a great iconoclast and doubtless a great thinker, performed a like service for Medicine.

By the middle of the seventeenth century the temporal power of the Pope outside of the contracted states of the Church sank into insignificance. The various sects of theologians who had fallen away from the parent stem were, in the nature of their differences, so disunited and so hostile to the Roman Church, that they were impotent to stem the tide of knowledge which was rising. The Royal Society of London (1660), the Academy of Paris (1665) and similar institutions in Germany (1677) were founded and became the centers of scientific thought and learning.

In the part of medical history which now follows it will be noted that the chief names are those of trans-alpine origin. Harvey and Willis were the great minds which dominated medical thought in England in the seventeenth century, not forgetting the immense influence wielded by Sydenham. Malpighi, born at Bologna and working at Pisa, upheld worthily the ancient glory of Italian medicine. Leeuwenhoek, Sylvius de la Boe, Van Ruysch, Boerhaave contributed the share of the newly emancipated Netherlands to the general fund of scientific knowledge gathered in this epoch. It is, however, to Conrad Victor Schneider, the learned Wittemberg professor, to whom especially rhinology, but other branches of our profession also, are indebted for rescuing the pathology of catarrh from the slough of Galen.

We must now trace in short outlines the epoch-making discoveries in medicine which followed the acquisition of anatomical knowledge in the Renaissance, especially those which directly affect our subject.

Berengar in his time had begun the differentiation of the veins. A half century later, 1553, we have noted that the unfortunate Servetus had declared the existence of the pulmonary circulation of the blood. Before Harvey the idea was that the blood surged back and forth through the vessels, according to the irritation of the parts.* It was believed that inspiration drives the blood to the vessels and expiration brings it back to the heart. At first even the discovery of the valves of the veins did not put observers on the right track, for Cannani is said to have discovered as early as 1547 the valves in the renal and iliac veins, and, even more important, that in the azygos

The Begin-
nings of
Physiology.

* For an exhaustive review of the ideas of the circulation before Harvey, see Daremberg, "Hist. Generale des Sc. Med.," Vol. 2, p. 582, ff.

The Circulation of the Blood.

vein. Fabricius ab Acquapendente, who was fortunate in having had Fallopius for his teacher and Harvey for his pupil, together with Sarpi in 1574 discovered these valves in nearly all the veins of the body. Harvey carried this knowledge home with him to England, and in 1616, the year of Shakespeare's death, he began to announce his great discovery in his lectures, which, however, was not published to the world until 1628.* In this great revelation he had not only been preceded, as we have seen, by Colombo and Servetus as to the pulmonary circulation, but there is no doubt that Cesalpinus, who died in 1603, the great botanist and the physician of Pope Clement, who burned Bruno, had some inkling of the systemic circulation.† When we come to study the history of tracheotomy we shall find Brasavola, who died in 1555, declaring, as quoted by Holmes, that "in Angina, when there is no other possibility of *admitting air to the heart*, we must incise the larynx below the abscess." With the other errors of the ancients this had existed in medicine since the beginning of its records. If we should translate the word *pneuma* as oxygen, the conception of the Greeks would, perhaps, not seem so strange to us in very many of their passages. However inaccurate and impossible this rendering would often be, it would help us to keep in mind the kernel of truth buried deep in the erroneous ideas of Hippocrates.

Before Harvey had published his great work, Faber‡ in 1624 had ascertained by investigation that not the smallest amount of air passed into the heart from the lungs. Harvey also pointed out that the air in the trachea does not pass beyond its ultimate subdivisions. Thus was this fundamental fact in medicine, so important especially to modern laryngology, established, after the usual period of resistance and discussion.

The Correction of the Error as to Catarrh.

Now let us immediately turn to the further elaboration of the history of that other fact so important to the development of our knowledge of the diseases of the upper-air tract, viz: the existence of the mucus glands and their functions. We have followed the error of the origin of catarrhs down to the time of Schneider. Just as we have perceived the necessity for some explanation of the moisture of the surface of the mucosæ, so we may understand the influence of the growing improbability that fluid percolated through the bony foramina at the base of the skull. Berengar we have seen imagining a way for the catarrh through the nutrient canal of the Sella

* "Exercitatio Anatomica de Motu Cordis et Sanguinis."

† See the quotation in the "Dictionnaire Historique de la Médecine." Ed. 1828, sub voce.

‡ "Sprengel," IV, 174.

Turcica and the sphenoid sinus. Vesalius, in spite of Sylvius, also refused to accept the cribiform plate as a true sieve, and found a way for the drain of the supposed secretions of the brain through the lacerated foramina. I have quoted Zerbi's idea that the processes given off from the olfactory bulbs were wicks for the drip of the cerebral fluids into the nose. Any one familiar with the old process of making dip candles will understand the idea. Perhaps this was the germ, transmitted of course from Galen, of the idea of Willis*, whose works were contemporaneous with those of Schneider.

The Olfactory
Nerves and
the Theory
of Willis

Willis and his school believed firmly in the existence of an actual nervous fluid, just as we find it convenient to assume the existence of a nervous electric fluid. The nervous fluid of Willis was the secretion of the brain. Some of this was received through the infundibulum by the pituitary gland, which he seemed to regard as a sort of reservoir for the superfluous fluid which was carried away by the blood vessels. He believed the nerves were porous and carried this vital animal fluid from the brain to different parts of the body, supplying them with nutriment and animal force. He says† "Within the cavities of the nose there are tubular membranes which contain thickly woven sensile fibres. In these membranes there are a number of slender nerves given off from the mammillary processes through the cribiform plate." He insists that, although the base of the skull‡ seems closed by membranes in the dead animal, the serum is so limpid and the nerves so porous that "nothing is more certain than that the serous humors are distilled from the nerves like serum from the membranes in swollen joints." This idea is again expressed in the "Nerverum Descriptio et Usus" where he derives the mammillary processes from the cerebral ventricles that they may there receive the serosities and transmit them through the olfactory bulbs to the nasal mucosa, which, from the supposition that it contained tubules, was thought capable of transmitting vapors and odors from below to the brain. It is probable that this erroneous idea and that of Van Ruysch, who believed that the blood vessels had tiny openings through which serum is distilled but not blood, arose from the observation of the little beads of clear secretion which may be observed by the naked eye to exude from the mouths of what we now know are the racemose glands. We must follow these erroneous ideas far beyond the time of Schneider and then retrace our footsteps in order to follow the right path upon which the latter entered. Van Ruysch,

The Vascular
Theory of
the Nasal
Glands

* *De Cerebri Anatome, cui accessit Nervorum Descriptio et Usus.* 1664.

† *De Anima Brutorum. De Sensu Olfactus, Cap. 13.*

‡ "*De Cerebri Anatome,*" Cap. 12.

whose "Thesaurus Anatomica" was published nearly fifty years after the works of Schneider, thus* speaks of the mucosa: "Nasal glands may be plainly seen here, since they are suffused with redness, on account of the fullness of the arterioles, and these are nothing except bundles of the extremities of the arterioles†, moistening the nose, which so-called glands, in the live man as well as in the dead man, escape detection, but in the specimen are plainly demonstrated by our method." (*i. e.*, the injection of wax into the arteries.) Diemerbroeck‡ preferred Willis' explanation to Schneider's, but modified it somewhat, believing the holes in the cribiform plate were filled by "nervous tubular membranes derived from the dura-mater, which open into the fungoid flesh of the nostrils, which is attached to the spongy bones, and through these tubules mucus is transmitted from the ventricles of the brain to the fungous flesh in which they terminate. This is the reason that something may come from the brain into the nose, but nothing can go from the nose into the brain, since when anything ascends it is stopped by the arrangement of the ends of the tubules in the flesh." He declares that these tubules may be seen with the magnifying glass if the upper bone of the roof of the nose is removed. The tubules may then be seen hanging to it. He denied the assertion that these structures are nerves, and refused them a place as the first pair. A cold for some reason causes not only an increase in the cerebral secretions, but the contraction of the cerebral membranes drives it into the nerves. We find Caspar Bartholinus, the son of Thomas, in 1679§ after referring to Schneider, still agreeing with the doctrines of Willis. Although Dionis|| refused entire credence to the idea of Willis as to the porosity of the nerves, and entirely rejected the permeability of the ethmoidal foramina, he still ascribed to the sutures of the skull the function of permitting the transpiration of the vapors which arise from the brain and its membranes. He also believed that they permitted absorption of external medication through them to the organs within the skull. Bryan Robinson, and especially Nicholas, in his treatise on Hypochondria (1719), finally entirely refuted the opinions of those who believed with Willis that the nerves were hollow channels, and called in doubt the existence of the fluid which was supposed to be carried through them.¶

* "Thes. Anatom.," VI, 3, Not. 2.

† The idea of the glands in the mucosæ being a bunch of blood vessels was a favorite doctrine with Bellini (1665) and the Italian School.

‡ "Anatome Corporis Humani," Ed. 1672, Liber IX. Cap. 7 and Lib. III, Cap. 8.

§ "Thomæ Bartholini Acta Medica Hafn.," Vol. V, p. 61.

|| "Cours d'Anatomic," 1701.

¶ Sprengel V. 172.

To understand the persistent hold this idea, in the face of Schneider's work, had on the medical mind, we must remember that Hippocrates looked upon the brain as a gland, and the whole fabric of his system was permeated with this belief. It persisted even with Malpighi, who did so much with the microscope, demonstrating not only the red globules of the blood (1661), the air vesicles of the lungs and many other phenomena, but the hollow nature of the acini of the conglomerate glands. Malpighi's friend, Carolus Fracassatus, writes to him thus concerning the brain:* "I think it is a pneumatic instrument which is an aid to movement and sense through the nerves—air ascends through the nerves to the brain." In Malpighi's response to this letter it is evident that he knew nothing to the contrary. On microscopic examination of the cerebral ganglia he declared their structure to be glandular in character. Glisson, who also did so much to advance the knowledge of the viscera, and many others, had the same idea. Wharton refused to accept this view, though he believed the nerves acted as channels for the transmission of fluids.

The Acini of
the Glands.

Notwithstanding the prevalence of all this error even among the very men who were gradually working out the truth, long before Schneider, we may recognize the advent of the conceptions which he founded as fact by actual observation. I am indebted to Sprengel (III, p. 280) for this quotation from a work first published in 1546:† "Moreover Cardanus suggests that the mucus which runs from the nose and mouth does not really come from the head, but very often it is produced by the secretory organs of the nose and throat." Van Helmont‡ who died in 1644, twenty years before the publication of Schneider's book on Catarrh, had a less accurate notion of the origin of pharyngeal secretions than Cardanus, but he at least did not ascribe them to the brain. Following Paracelsus in his mysticism somewhat, but greatly surpassing him in honesty and actual knowledge, he did much to introduce chemical principles into medicine. He seems to have been the first to assert that diseases are local in their actions and not dependent on a disturbance of the whole body or any vital principle.

The Predecessors of
Schneider.

Van Helmont says: "The mucosities which are expelled by the expectoration and in coryza, do not come from the head nor are they secreted by the arteries, but they arise from the superfluity of aliments which remain adherent at the upper part of the pharynx."

* Malpighi: *Epistola Anatomica de Cerebro*. 1665.

† Cardanus. *Contradic. Med. Lib. II, tr. I. Cap. 4*, p. 443.

‡ *Opera Omnia. Catarrh. Delirament*, p. 412. Ed. 1682.

Wepfer, whose work was published in 1658*, has the following reference to the origin of catarrhs and the destination of the vapors. He says that the latter were supposed to extend from the stomach to the head, "just as though the head was to be compared to the smoky roof of a house or the lid of an alembic," but he denied the possibility of this except by means of the carotid vessels. "At the base of the brain is the thick meninges, at that point most impenetrable and almost four times the usual thickness. The cranium in the live animal, or in the animal just dead and not yet deprived of all the membranes, should not be thought to be similar to the representations of it in books on the bones. Especially all those holes which are seen at the base are occluded so that no ingress or egress is allowed to the vapors or the humors, as may easily be determined." How much of this may have been derived from Schneider's work on the ethmoid bone published shortly before, does not appear. We see, therefore, as we have noted in the discovery of the circulation of the blood by Harvey that the idea of the local origin of catarrhal discharges had long existed in the world before Schneider, and we have seen that the error of their cerebral origin persisted many years after his death (1680).

The "De Catarrhis" of Schneider.

A view of the voluminous writings of Conrad Victor, Schneider may well appal the stoutest heart. Never was the kernel of an important fact so wrapped up in the husks of verbosity.† The dissertation on the cribriform bone is a treatise which opens the way, as must have done the investigations on which it is founded for the author's thoughts, to the larger work on Catarrh, for in his opening remarks he insists upon the impermeability of the base of the skull to liquids or air. The grateful reader may well excuse any omissions in the following exceedingly compressed account of Schneider's dissertations on Catarrh. He showed that the origin of the catarrhal discharges can not be in the cranial cavity, and they could not get out if such secretions were formed there since neither the cribriform plate nor the nutrient canal of the sphenoid bone nor the lacerated foramina, as claimed by various writers, are pervious. As a matter of fact, no fluid so viscid as mucus is to be found there at all. Neither could it be born through the nerves. (Libri I and II).

* *Observationes Anatomicæ ex Cadaveribus eorum quos sustulit Apoplexia.*

† The patient reader may be referred to,

Dissertatio de osse cribiforme, 1655.

De Catarrhis, libri VI—1660—1661.

De Catarrhis, liber specialissimus—1664.

Although exceedingly verbose, still his Latin style is perspicuous and by no means wearisome reading.

He described a new origin for nasal discharge in the anterior and posterior pituitary membranes, as he calls them. Mucus may be squeezed out of the membranes of these regions even in the dead subject. He does not once mention the glands as the source in the mucosa of this mucus. He speaks in the same way of the tonsils and of the ocular and lachrymal mucosa. The anterior and posterior pituitary membrane when normal exudes this mucus moderately. When more is exuded catarrh arises. He insisted that in coryza the brain is not affected at all. Even in a horse dying of glanders, the brain was found unaffected. There can be no doubt from his description of what he calls the posterior pituitary membrane that he had noted the existence of lymphoid hypertrophy, but he does not clearly recognize it as pathological. (Libri III and IV). His etiology of catarrh is hardly worth transcribing and the same may be said of the treatment, notwithstanding the radical character of the advance he made in the knowledge of the physiology and pathology of the nose. Coryza he defines as a catarrh of the anterior pituitary membrane, while under the head of posterior pituitary catarrh he includes affections of the throat. *Branchus* is a name he gave to too great a secretion from the larynx. Apparently he derived this from Paracelsus. It did not long continue in use after his day. When the latter is accompanied by difficulty in breathing of all kinds he called it catarrhus suffocativus, and this term persisted for more than a hundred years in medical literature, notwithstanding the differentiation which was constantly going on, and for a time was synonymous both with diphtheria and with bronchial asthma.

While, therefore, it was Schneider who clearly demonstrated that the mucosa itself is the source of catarrhal discharges, he did not demonstrate those structures in the mucosa in which it is formed and from which it escapes, *i. e.* the racemose glands.* If the reader will refer back to the quotation of Marinus I have taken from Galen (P. 191), it will at once be apparent that while what the ancients called glands had been noted, their function was for the most part unknown, and included many things which are no longer regarded as glands, the distinction between the conglobate and the conglomerate, or the lymph nodes and the racemose glands being of course entirely unsuspected. In the course of this history we

The Evolution
of Knowl-
edge of the
Mucous
Glands

* Let us for the sake of simplicity avoid the complicated question as to how much of the nasal secretions come directly from the blood vessels without passing through glandular epithelium.

have found reference to the brain, the tonsils and the thyroid glands as moistening the adjacent mucosæ. While the nature of the brain and that of the tonsils have long been known it is only of recent years that the thyroid physiology has begun to be elucidated, though Haller a hundred and fifty years ago asserted in his Physiology that it had to do with the elaboration of the blood. Many had speculated as to the function of the thyroid gland. Desnoues, who is said to have originated the method of injecting of blood vessels with wax in his demonstrations, and Coschowitz, both of them seventeenth century observers, declared, according to Haller, they had found the ducts of the thyroid opening into the foramen cæcum of the tongue. This was refuted by Morgagni.

I quote from the "Adeno-Graphia Curiosa" of Nuck published first in 1692, "Those who first began to examine the structure of glands, both conglobate and conglomerate, were Wirsung, Wharton and Steno, who not only demonstrated the size and shape of the glands, but their inlets and outlets." It may be noted that Nuck, though he does not in his catalogue allude to the nasal glands, speaks of those of the membranes in general as clinging close to their substance. Knowledge of the true condition of affairs as to the origin of catarrh had advanced so far with many observers as to induce Nuck to write a humorous epitaph upon the pineal gland as such. The history of the racemose glands of the mucosæ is so inextricably interwoven with that of the glandular organs of the general system that they can not well be separated.

The Chyliferous System.

Eustachius had already in the sixteenth century described the thoracic duct. Aselli in 1622 announced the discovery of the lacteals in the mesentery, the existence of which, illustrating the fallibility of great minds, was obstinately and persistently denied by Harvey. In 1641-3 Hoffman, Wirsung, Riolan, Wormius discovered and confirmed the existence of the pancreas and its connection with the digestive process. Pecquet a few years later discovered the chyle in the vena cava coming from the thoracic duct by way of the subclavian vein, and again the rule of human fallibility was followed by Aselli, who denied the reality of Pecquet's addition to his own discovery, (Sprengel IV, 209).

The Lymphatics.

Gradually the lymphatic system was proven not to be a part of the chyliferous. Fallopius many years previously having noted the lymphatics of the liver, Rudbeck distinguished them from the lacteals more recently discovered by Aselli. The liver became an excretory instead of a secretory organ after Glisson had elucidated its

anatomy. Thomas Wharton,* whose name survives attached to the duct of the submaxillary gland, asserted the brain is of a different nature from the glands and other viscera. In spite of many mistakes he added greatly to our knowledge of the structure and functions of the glands.†

Franciscus de la Boe Sylvius,‡ according to Haller, was the first to separate the conglomerate from the conglobate glands, our racemose and lymphatic glands respectively. His pupils, Steno and De Graaf, greatly extended this differentiation. De la Boe, following the thought of Galen in quoting Marinus, says that there are two primary kinds of glands. "For there are some as if made up of separate parts and from smaller conglomerate glands, stuck together, as it were, with some inequality of the surface, such as the pancreas and thymus. Others are observed to have a smooth surface and as if blown up and moulded together. (*Ex una quasi sibi continuata substantia, conflata et conglobata.*) Such as are contained in the mesentery and in the groin and elsewhere are supplied with lymphatic vessels. To this may be added, if desirable, a third kind, the renal glands and their accessories." While there is much said by this author of the pancreatic and salivary glands as distinct from the lymphatic or conglobate glands, no mention is made of the muciparous glands. To Steno,§ perhaps, more clearly than anyone else, belongs the credit of first describing them. He described the larger glands of the mouth and eyes and the *vessels* of the membrane of the nose, which, he declares, are of two kinds, and they exist in the mucous membrane for the purpose of keeping them moist. Steno first noted the duct which bears his name in 1660, but it had been known to others before him. Sprengel (IV, p. 236) quotes Walther for authority in asserting that Rivin was the first to discover the duct of the sublingual gland which Gasper Bartholinus, the son of Thomas, claimed the honor of first noting in 1682, ranula or dilatation of this duct having been known and operated on from the earliest times.|| Nuck (l. c.) added a greater exactitude

The Mucous
Glands.

* "Adenographia," 1656.

† Those who desire to find an account of the services rendered to medicine by Wharton, as well as an account of the numerous and glaring errors mingled with his original observations, may refer to Daremberg, "Hist. Gen. des Sc. Med.," II, p. 640 seq. He believed the nerves are vessels by which the glands intercommunicate.

‡ "Collectio Disputationum Medicarum, 1663.

§ "Observationes Anatomicæ, Quibus varia Oris Oculorum et Narium Vasa describuntur," 1662. I know not how to account for the priority in date of Steno's book over De la Boe's, if we are to accept Haller's remark, except that the teachings of the latter were long unpublished, and, indeed, they seem much less advanced than Steno's.

|| Celsus: Lib. VII, Cap. XII, 5.

and a wider observation of the glands to the works of the more original writers just mentioned.

Havers (1691) supposed the spaces known by his name which he first observed in bone were glands, and Pacchioni's name is attached to the structures in the dura mater which he believed to be glands (1705).

The Micro-
scope.

I have not exhausted by any means the indications of the great activity in the latter part of the seventeenth century in the anatomical investigations of glandular structures, made possible by the improved microscope of Leeuwenhoek, though it was Malpighi, with a less effective lens, in spite of his egregious blunder as to the brain, who first demonstrated, as has been said, the hollow nature of the conglomerate glands (1689). As we have seen, Van Ruysch, many years later, attempted to refute this opinion, claiming the glands were bunches of minute blood vessels, as Bellini had declared.

The old compound microscope, said to have been first suggested by Zansz in 1590, was a very imperfect instrument, and about a hundred years later was superseded by the vastly more efficient, simple high curvature lens of Leeuwenhoek, with which he studied the capillary circulation, the infusoria and a host of other hitherto unnoted phenomena. It was doubtless with such a magnifying glass that Santorini* examined the glands in the nasal mucosa. "If we wish to demonstrate them most clearly we arrange the membrane, previously cleansed and somewhat macerated under the crystal, and the light being conveniently and adequately arranged for it, we may recognize their number, their size and their color. Their size varies indeed, some being a little ovoid, and these are about equal to a grain of mustard."

The Pharyn-
geal Tonsil.

Schneider† gave a rather poor illustration of the pharyngeal tonsil and thus describes it: "It is of a whitish color, the adjoining membranes being bloody or dusky. It is fuller than they and like fat. It is always moist and exudes a glutinous substance." He located very definitely this posterior pituitary membrane, as he called it, as existing between the vomer and the foramen magnum, being bounded laterally by the pterygoid plates. This being Schneider's description‡ of the pharyngeal tonsil, we find Santorini describing it, as he did the glands, much more clearly than did his predecessors. "This

* "Observationes Anatomicæ," 1724, cap. 5.

† "De Catarrhis," III, fig. 2.

‡ This passage may perhaps be more readily referred to in the excerpt made from Schneider's text in the footnote to the first page of Zuckerkandl's "Normale und Pathologische Anatomie der Nasenhöhle," Bd. I, 1893.

membrane I have sometimes met arranged in shallow grooves (cavities) as if with some kind of order. Sometimes I have found it in irregularly arranged forms and so cavernous that, with its gaping holes and deep sinuses it almost equalled the tonsils. From this a mucous fluid is apt to exude." Haller also described this organ.

Notwithstanding the opposition to Schneider's views and the persistence of the old pathology, they were at once accepted by many distinguished medical writers. Thus we find Ettmüller* saying in 1685: "The origin of all catarrhs is the conglomerate glands."

During the seventeenth century we hear a good deal about vital heat, somewhat equivalent, at least in a physical sense, to what we now mean by animal heat. This was connected at first with ideas of the soul, whose habitat the materialist Descartes fixed in the pineal gland, which was beginning to be vacated as the storehouse for nasal secretion. This "Vital Heat" was an outgrowth of the "Pneuma" of the Ancients. Gradually the true idea arose out of this, but much later, that this vital heat depends upon chemical action. Before this time, under the old theoretical pathology not only were diseases hot or cold or wet or dry, but their remedies must perforce partake of the same or of opposite qualities. It is very difficult for the modern student of medical history to attempt to fathom the reasons for according these properties either to drugs or diseases. He is apt to regard them as the "ludibrium ingenii humani," but it is a joke spread thick over the broad expanse of more than twenty centuries, and if in the course of this history, very little is said of them, it is not because they do not start from the page of every ancient author after Galen.

The Seventeenth Century Theories.

While the sixteenth century is marked in medical history by great advances in the knowledge of gross anatomical facts, the seventeenth is no less distinguished by the elucidation of an enormous amount of physiological data. This we have seen was a logical sequence, and as we proceed we will perceive, I trust, that the pathological observations which followed in the eighteenth were a natural outgrowth of physiological activities in a preceding epoch. Medical history has its lessons, no less useful than that of the rise and fall of empires.

Sanctorius (1516-1636) who had witnessed Galileo's invention of the thermometer improved it and adapted it to clinical purposes. The influence of the philosophy of Descartes had resulted in the advent of the Iatro-physical school which had its earliest and great-

The Iatro-Physical and Iatro-Chemical Schools

* Opera Omnia: "De Catarrhis."

est exponents in Italy. The alchemists and Paracelsus had finally subsided. Out of their activities was brought about the introduction into medicine of a more or less rational Iatro-chemical school which had perhaps a wider following. We recognize the importance of the observation which noted the change in the color of the blood in the transit of the lungs. This was made by several, among them by Lower who in another publication showed himself the adherent of the new ideas of Schneider, for he published in 1671 a "Dissertation on the origin of Catarrh in which it is shown that it does not come from from the brain." This change in the color of the blood led to what was practically the discovery of Oxygen by Mayow who wrote treatises at Oxford in 1668 and 1674. He identified the gas which causes this change as nitre-air or ærial spirit and as the same agent which supports combustion.

In the seventeenth century medical monographs, the specialization, of medical literature, became more numerous and instead of weighty voluminous tomes containing all the wisdom garnered from all the fields of medicine or even of universal science we meet with the masterly essays of Harvey and of Malpighi. We more often remember the fight between the barber-surgeons and those who disdained to do anything but observe and evolve theories of which the age was prolific. These are only a few hints of the broadening of knowledge and the consequent necessary narrowing of the fields of individual human endeavor. Many old errors still lingered. Van Helmont who did not die until 1644, and Willis who was not born until 1622 when Harvey had been teaching his doctrines for six years, still conceived of the air as passing from the air channels through pores into the thoracic cavity. (Sprengel IV, 186). As far back as the time of Euclid under the Ptolemies light was supposed to issue from the eye to the object. Although this was corrected by the Arabians, mistaken theories still prevailed, but we are now in the time of Newton through the effulgence of whose great intellect Medicine was guided in the study of the physiology of the eye.

Far beyond the period of the early Renaissance and well into the seventeenth century may be found the recommendation of stercora-ceous drugs for angina. Hollerius, writing in 1623, advises their use and faithfully transcribes one form of the old swallow prescription. In a curious old book, apparently for home use, published in 1692 by the Hon. R. Boyle, Fellow of the Royal Society of London* among many others I find the following prescription:

* Medical Experiments or Collection of Choice and Safe Remedies.

"Take about one dram of Album Graecum or white dog's turd, burnt to perfect whiteness, and with about one ounce of Honey of Roses, or clarified honey, make thereof a linctus to be very slowly let down the throat." Many better known writers still gave them a place in their pharmacopeia. Thus we find the prescription of both the swallow and the dog's excrement in the *Bibliotheca Pharmaceuticæ Medicæ* of Mangetus (Edit., 1703, Tom I, P. 982 and 470. Gradually, however, much of the Chaldean Pharmacopeia was relegated to the old-wives medicine chest, where it still lingers, supported by a credulity which has not all taken refuge in the same ménage. It was about as hard to get rid of this sort of medication as it was to introduce a more efficacious. One may see in the history of the introduction of quinine, about the only drug which we have that really cures a disease and annihilates its cause, how rebellious the human mind is to the plain demonstration of fact in therapeutics, when it contravenes the theoretical doctrines of the day. The Jesuits bark crept into Europe in 1638 and the orthodox practitioner of the day absolutely rejected it and for a time left its employment to be mingled with the hocus-pocus of priests and mountebanks. It is even charged against our profession that one reason for the resistance to its use was the promptness of its action and the simplicity of its preparation by the apothecaries, intermittent fever being then as rich a mine for the doctor and druggist as phthisis still is.

Amulets and charms, it is true, disappeared from medicine soon after the beginning of the Renaissance, but astrology, out of which grew the discoveries of Copernicus and Galileo, long continued prominent in medical thought as it did in its influence upon the actions of men. Pope Paul III, who became pontiff in 1534, learned as he was in Greek and Latin, never presumed to undertake the smallest personal business nor engage in the weightiest affairs of state without first consulting the stars. Two hundred years later we shall find a grave doctor discoursing on the influence of the moon on nasal polypi.

Soon, however, among men of science astrology became astronomy, alchemy became chemistry and therapeutics soon began to look to physiology and pathology for help.

THE ATTIC OF THE NOSE.*

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In the earlier days of Modern Rhinology the attention given the nose was almost entirely devoted to the lower portion thereof, and consisted principally in cauterizations of the inferior turbinal and the occasional removal of some prominent septal growth. The chief object in view was to secure a sufficient "breath-way" in either nostril, without appreciation of the since learned fact that while a large opening near the floor of the nose may permit the passage of a sufficient air current it nevertheless falls far short of the requirements of normal nasal respiration.

In this paper it is purposed to give some attention to nasal physiology and in this connection, as well as from a pathologic standpoint, a more particular attention to that portion of the nose of which the middle turbinal constitutes the inferior boundary, and to which space I have previously assigned the appellation "attic of the nose."^{1 2 3}

The patient with a stoppage of the upper part of the nose, as from an acute coryza, will complain of a sensation of inability to breathe through the nose even though the inferior portion of the nasal channel appears free and unobstructed. In the same way during childhood years, while there is present only so slight a degree of adenoid enlargement as to but barely touch the posterior ends of the middle turbinals, and, therefore, only occlude the superior meatuses, the practice of mouth breathing is often observed, even though a fairly patulous condition of the lower part of the nose can be easily demonstrated. These facts seem to prove nasal occlusion to be often more fancied than real, and that a failure to feel air high in the nose gives a sensation of stoppage much in excess of the actual degree of occlusion which may exist.

The course of the air current in nasal respiration has been fully demonstrated by the experiments of Goodale⁴ and Freeman⁵ who have proved that in its course it favors the middle and superior meatuses. In inhalation this is probably in part due to the plane

* Read before the sixth annual meeting of the Western Ophthalmologic and Oto-Laryngologic Association at Cincinnati, April, 1901.

of the anterior openings to the nostrils, and in exhalation to the contour of the pharyngeal vault.

Occlusion of the attic of the nose is in a large majority of cases due to enlargement of the middle turbinal. In some cases the occlusion is due to a condition which I described some years ago as "anterior soft hypertrophies of the nasal septum,"¹ which pathologic condition has since been alluded to by Browne as the tubercle of the septum⁶ (p. 783). Another cause of occlusion may be the convexity of a septum deflected at this point. It of course matters not whether it be the turbinal or the septum that is at fault so long as occlusion exists. Nasal polypi when present also occlude the nasal attic and are frequently the cause of varying reflex symptoms.

In the process of respiration in the normal nose, in which no opposing surfaces touch, the air penetrates without impediment to all parts of the nasal fossæ, and though evaporation of the nasal serum becomes properly humidified. In previous papers I have repeatedly mentioned this feature of evaporation^{1 2 3 7 8 9 10} though it has not yet been adopted by other medical writers. As the word evaporation is the best available word to properly describe the process I have confidence that in time it will be employed by others.

Whenever there is a touching of opposing surfaces obstruction is thereby produced in proportion to the extent of such touching. By a simple touching of small area there is at that point an impediment to evaporation, and thus the nasal mucus accumulates until through excess it becomes a morbid secretion (II, p. 91), for being an animal fluid, and exposed to the bacteria of the air, it becomes thereby infected, and hence a catarrhal discharge. Next, as it is unduly retained at the point of touching, and is irritating, it soon affects the mucous membrane at this point until through irritation there is an increase of the mucus secreted, which is abnormal in character like the normally colorless tears of the eye which have become milky in the presence of conjunctival inflammation. The slight touching previously considered in time causes, by the associated inflammatory action, a hypertrophic development or hyperplastic formation until the extent of surface pressure is increased, and may at times extend sufficiently to entirely occlude the anterior entrance to the nasal attic, and thus precipitate any of the several disadvantages carried therewith.

Impairment of the ventilation and drainage of any meatus of the nose means interference with the required to-and-fro motion of air by the opening of any sinus connected therewith, and in this way

is produced a catarrhal sinusitis which in time, and through infection, may become empyemic. We thus have an explanation of chronic ethmoiditis and the ethmoidal degeneration which is the progenitor of nasal polypi.

The labyrinth of ethmoidal cells are separated one from the other by thin and paper-like walls, which through chronic sinusitis, may suffer necrotic degeneration. Furthermore these walls are at times perforated through defective ossification, and may thus provide an almost direct communication with the orbit (6, p. 854.) In this way can be partially explained the conjunctival inflammation, as well as other visual disturbances, which are often observed in connection with nasal attic obstruction. Ocular manifestations may also be accounted for through extension of chronic inflammation so as to cause irritation or partial occlusion of the lachrymal duct.

Pressure contact between the nasal septum and the anterior end of the middle turbinal tends to induce venous congestion therein, which at times manifests itself externally in erythema or acne of the face (12, p. 73.) Extension of such congestion to the eye, which is equally near, and so intimately related through vascular supply, may further explain the tendency to catarrhal conjunctivitis.

Occlusion of the nasal attic is the most frequent cause of post-nasal catarrh, which in time is the cause of Eustachian catarrh, recurrent laryngitis, catarrhal bronchitis and gastro-intestinal catarrh. Alternate rarefaction and condensation of air in the post-nasal space, as a necessary result of partial nasal occlusion, induces hyperæmia of the Eustachian prominences and tubes, and hence furthermore assists in causing aural complication.

Anterior occlusion of the attic of the nose when pronounced causes impairment of smell. Hypertrophy of the middle turbinal may become sufficiently pronounced to cause pressure against the inferior turbinal and thus impinge upon the middle meatus so as to have a deleterious effect upon the sinuses connected therewith.

The nose, with its accessory sinuses, has been justly called the sounding-board of the voice. When the nasal attic is occluded, the high register of the singing voice is made defective through the lessening of nasal resonance. In another way the voice is impaired by such occlusion through the associated post-nasal catarrh, which induces chronic pharyngitis and recurrent laryngitis or so-called minister's sore throat¹³. White hypertrophies upon either side of the vomer, at the posterior choanæ, are probably induced by the alternate condensation and rarefaction of air in the post-nasal space, when nasal

stenosis is present, and are probably further developed by the use of the singing voice, as they are not infrequently observed in vocalists with high nasal occlusion.

Attic occlusion, through middle turbinal hypertrophy, is a frequent concomitant of atrophic rhinitis, and largely explains the usual impairment of smell. In this disease the best results may be expected from a free attack upon the enlarged middle turbinal so as to restore the lost ventilation and drainage of the nasal attic, and incidentally thus open the way for recovery from sphenoidal or posterior ethmoidal sinus disease, which is regarded as a frequent complication thereof.³

Neurotic or reflex manifestations are among the most important of the results due to intra-nasal pressure through enlargement of the middle turbinal, which may be said to be the neurotic center of the nose, and these manifestations are proportionate in intensity to the general neurotic tendency of the patient. First and foremost might be mentioned headache which possesses certain characteristics whereby it may be differentiated from headache due to other causes.⁸ Such headache is usually considered neuralgic and centers itself about the orbit. Cough and sneezing are at times observed, particularly in connection with frequent attacks of recurrent coryza.

Hay fever is one of the most troublesome and important manifestations observed in connection with middle turbinal hypertrophy and attic occlusion. As far as my experience has extended I have seen no case subject to hay fever with a normal nasal attic. In this disease there is undoubtedly present an underlying or systemic cause as to the exact nature of which different opinions have been advanced. Beard was one of the earliest to recognize a systemic cause, and considered it neurotic with an important factor of heredity.¹⁴

Next there is an exciting cause, and ever since the elaborate experiments made by Blackley¹⁵ there has been an universal acceptance of the so-called pollen theory. In occasional cases an idiosyncrasy is manifested for other emanations. Whether the irritant acts mechanically or through the generation of a toxine by a fermentative process in the alkaline nasal secretion is immaterial, and the profound depression of the nervous system, as suggested by Boulette,¹⁶ is probably due to absorption by the lymphatics of ptomaines which thus enter the general circulation. In support of this view may be cited the instructive experience of Hollopeter,¹⁷ who, almost entirely by the systematic and daily use of local cleansing treatments, has been enabled to relieve a large number of hay fever sufferers.

Lastly, and most important, there is the local cause or nasal abnormality. This view was first and ably advanced by Daly,¹⁸ who regarded it as a "diseased condition of the nasal cavities." Shortly thereafter Roe¹⁹ indorsed this idea and advocated the "removal of diseased tissue in order to remove susceptibility to future attacks." The following year Harrison Allen²⁰ considered the local cause to be "obstruction of one or both nasal chambers." The probable essential factor is that owing to structural abnormality and occlusion there is a hyper-sensitiveness of the nasal mucous membrane which in different cases manifests varying degrees of susceptibility to different exciting causes.

The logical combination of the three specified causes has been noted by Sajous,²¹ Sir Andrew Clark,²² Bosworth,¹¹ Grayson²³ and others. While Clark regarded the systemic factor as being a neurotic habit, Grayson claims that the systemic cause is principally a defect of the nutritive system, and believes that the digestive tract is the cradle of the systemic error. In explanation of the neurotic theory he says that through "continued absorption of toxic materials from the intestinal tube, or with persistent incomplete elimination of the products of suboxidation, it is only a question of time when auto-toxemia will provide us with any of the functional neuroses, from hay fever and asthma to chorea and epilepsy."

Hay fever may be said to rest upon a tripod, viz.: a systemic condition, a nasal abnormality and an exciting cause, and if any one of the three be removed its support is destroyed. From its very nature it is apparent that the exciting cause cannot be avoided by those who cannot make an annual change of residence.

The peculiar systemic condition has not been positively recognized, and probably varies with different patients. The uric acid diathesis theory has been plausibly advanced by Bishop²⁴. Unfortunately this is a diathesis that has baffled the skill of our best therapists. Furthermore we often meet with uric acid sufferers who have nasal attic occlusion and who are not subject to hay fever, no matter how much exposed to the acknowledged exciting cause.

If granted that the predisposing cause is neurotic then improvement of the general health is urgently called for, and what can promise more in this direction than a restoration of perfect nasal respiration? Again, if it be claimed that it is gastro-intestinal, or the so-called uric acid diathesis, which by the way is probably due to digestive defect or mal-assimilation, combined with defective elimination, then what can improve the general condition more

than the subsidence of a nasal-pharyngeal catarrh through the corrective influence of proper intra-nasal surgical treatment?

While every effort should be exerted to build up and improve the general health the only practical prophylaxis against hay fever which we can offer the patient is intra-nasal surgery in order to remove and destroy the occluding and hypertrophied tissue, and thus restore to the fullest practical degree the normal ventilation and drainage of the attic of the nose. Hay fever patients are proverbially skeptical as to the possibilities of medical or rhinological treatment, and when able so to do, as they most often are, it being a disease more prevalent with the well-to-do than with the poor, they prefer climatic change instead of medical treatment. One reason the latter has so often proven inefficient is because it is postponed until shortly before the time of the annual attack, and another reason, to my mind, is because the rhinologist has not been sufficiently aggressive in his treatment.

The simple cauterization of sensitive areas is only a temporization, but if the more active steps are taken which I advocate the sensitive areas will quickly disappear (11, p. 226). What is required is a free passage between the septum and outer walls so the nasal attic is perfectly ventilated and drained. My custom is to urge patients to begin treatment in the fall, or shortly after the subsidence of the annual attack, if they would be in condition to withstand the exposure of the following summer. I furthermore advise them that the experience of their past, particularly if they are old sufferers, has placed upon them a neurotic stigma which will desire to manifest itself at the usual time each year, but that its effect will be less and less noticed as the succeeding summers pass by.

Asthma, which is intimately associated with hay fever, may also be caused by nasal attic occlusion. While so great an authority as Trusseau regarded asthma as being entirely neurotic, and even mentioned it as "an epilepsy of the lungs," I am disposed to regard it less as a neurosis and more as being directly due to local irritation produced by the accumulation of catarrhal secretions in the lung tubes, which secretions are, as before mentioned, secondary to the impaired ventilation and drainage of the nose. Ballenger²⁵ has called attention to the fact that a chronic catarrhal condition of the bronchial tubes in their finer ramifications and terminal air vesicles, by retarding osmosis, causes impaired oxygenation and purification of the blood, and leads to a partial asphyxiation with the accompanying auto-toxic effects. In this way is further explained how in such condition an asthmatic attack can be easily precipitated. Bosworth (11, p. 214) states that nasal stenosis

tends to produce rarefaction of air in the bronchial passages with every act of inspiration, thus producing a tendency to dilatation of the bronchial blood vessels. During the paroxysm of an asthmatic attack both the rarefaction and congestion are intensified.

Melancholia, neuresthenia and insomnia have all been traced to middle turbinal hypertrophy, and even aprosexia, mental hebetude and loss of memory (3.) These I would explain principally on the ground of impaired general health due to imperfect nasal respiration, while neuralgia, chorea, epilepsy and vertigo reported by others are more likely due to nerve pressure from the intra-nasal hypertrophy.

In a general way my mode of treatment in all nasal cases is to follow the plan of the civil engineer who is constructing a railway tunnel under a mountainous ridge; viz., to begin at both ends and work toward the center; hence I first correct any tonsillar or adenoid trouble present, and all deformities of the anterior nares low down. After this I have an increased tolerance of the patient, and the required room to proceed to the higher and more secluded region of the nasal attic with the object of causing the nose to assume, as nearly as practical, the contour of the ideal model, with no opposing surfaces touching, and with free ventilation and drainage of all parts of the fossæ. With correct principles of treatment as the guide they can be applied to the various conditions met with, though each case is a rule unto itself. As a routine practice, preliminary to the operative treatment, it is my custom to prepare the parts by prescribing the hourly use of a mild alkaline cleansing solution for a period of a week or ten days.²⁶

The operative steps may now be briefly noted. In case of the anterior soft hypertrophies of the nasal septum they should be thoroughly destroyed with the galvano cautery, the technique of which I fully described in a previously alluded to paper.¹

In case deflection of the septum at this point is a factor it will often be found that the middle turbinal on the concave side has become sufficiently enlarged so as to leave only a normal space between it and the septum, while on the convex side there is an occlusion with pressure. While it would in such case be more ideal to straighten the septum than to leave it with a slight deflection, it would be necessary before so doing to first remove quite a section from the middle turbinal on the concave side, and after the straightening there might remain an excess of space on the previously convex side. In such case, as it is apparent that the middle turbinal on the concave side is causing no annoyance, while the one on the opposite side through pressure contact is chronically irritated, and, as the annoyance of operating one is the same as the annoyance of operating the other, my custom is to attack the one

on the convex side, removing enough to give the required space. While a deflection of the septum is troublesome when well forward or low down, as well as when pronounced, a slight deflection at the point under consideration is of but little annoyance so long as the required free space can be secured at either side of it. In this way the surgeon can cause this portion of the nose to conform as nearly as practical to the ideal standard.

My method of operating upon the middle turbinal is by using first a guarded trephine of special design, next a shears, and lastly



Fig. 1. Nasal Trephine and Guard (3-5 size).

a cold snare in the manner fully described in my paper presented before this Society at its meeting two years ago. (3) The only improvement I have since made upon the operation therein described is in the use of an adjustable handle for firmly holding the hand-

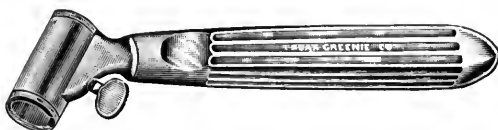


Fig. 2. Hand Piece Handle (1-2 size).

piece, and at the same time permitting the operator to see much better than when the hand-piece is held directly in the hand.

Columbus Memorial Building.

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- ¹⁵ Blackley: "Hay Fever or Hay Asthma," London, 1873.
- ¹⁶ *Medical Fortnightly*, March 25, 1901.
- ¹⁷ Hollopeter: "Hay Fever," Philadelphia, 1898.
- ¹⁸ "Transac. Amer. Laryng. Assn.," 1881, p. 164.
- ¹⁹ *N. Y. Med. Journ.*, 1883, xxxvii, pp. 509, 540.
- ²⁰ *Amer. Journ. Med. Sci.*, 1884, pp. 156, 164.
- ²¹ *Med. and Surg. Reporter*, 1883, xlix, p. 675.
- ²² Cavendish Lecture, London, 1883.
- ²³ *Therapeutic Gazette*, 1897, p. 653.
- ²⁴ Bishop: "Diseases of the Ear, Nose and Throat," Philadelphia, 1898.
- ²⁵ *Alkaloidal Clinic*, April, 1897, and *Medicine*, November, 1897.
- ²⁶ *Annals Ophthal., Otol. and Laryngol.*, October, 1896.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Stated Meeting November 27, 1901.

W. K. SIMPSON, M.D., Chairman.

Papillary Hypertrophy of the Inferior Turbinal.

DR. R. C. MYLES presented this specimen, which was quite large, and which he had removed yesterday from a man, thirty-nine years of age.

DR. J. E. NEWCOMB said that Dr. Quinlan was to be congratulated on having seen so many true myxomata of the nose, for it was a rare lesion. True myxomatous tissue, such as occurs in the Wharton's jelly of the umbilical cord, was not very often reproduced in the nose. Myxomatous tissue, in point of development, was homologous with fatty tissue, and consequently was not to be expected in the nose. Most of the so-called polyps are inflammatory hypertrophies.

Lichen Planus on the Body, and in the Mouth and Pharynx.

DR. B. LAPOWSKI presented a young man having lichen planus of the body simultaneously with lichen planus of the mouth and pharynx. He was receiving internally the bichloride of mercury. Dr. Lapowski said that he would like to know if it were possible to make a diagnosis from the appearance of the mucous membrane alone.

Psoriasis of the Lower Extremities and on the Hard Palate.

DR. LAPOWSKI also presented a man having psoriasis of the lower extremities with a patch on the hard palate. The eruption had appeared first on the lower extremities, and two months later it had appeared on the hard palate. In the latter situation were to be seen two white plaques. Whether the plaques can be regarded as psoriasis or not he is unable to say.

DR. W. K. SIMPSON thought the eruption on the hard palate was a normal, and not a pathological plaque. In his opinion, it was not uncommon to see such a patch of discoloration. Nearly at the junction of the hard palate with the soft palate the latter is a

little raised, and there is a little fissure running from it to the hard palate. This only would lead him to think it was possibly of inflammatory origin.

DR. WENDELL C. PHILLIPS suggested that interesting information might be obtained if systematic study of the mucous membranes of patients in dermatological clinics were made by a laryngologist.

Affections of the Mouth and Throat in the Adult, Associated with the Fusiform Bacillus and Spirillum of Vincent.

DR. EMIL MAYER read this paper, and illustrated it by water-color drawings and microscopic specimens. He reported the following case: A male, twenty-three years of age, had called upon him in September, 1901. He had always been subject to mild sore throats; the family and personal history were excellent. He was a person of fine physique, coming from the upper walks of life, and was a moderate smoker. He found it difficult to take solid food at the time of his first visit. On the right tonsil were three separate spots of white deposit, irregular in shape, and having an ulcerated bleeding surface underneath. There were two similar deposits on the left tonsil. The membrane was readily detached, but reformed very promptly. The exudate was examined at the laboratory of the Mount Sinai Hospital by Dr. E. Libman, and its true nature demonstrated. There were numerous non-motile bacilli found in the specimen, and, for the most part, they were pointed at both ends. They stained well with the usual basic stains. No spores could be found. The findings in this case were similar to those noted by Vincent, except that the bacilli in this case were not motile. The treatment had consisted in the use of gargles of boric acid and daily applications of iodine. The case was practically well in four weeks. This affection seemed to be found most commonly in the adult male, and had been attributed to the use of tobacco. While it usually attacked the tonsils, it also appeared as a stomatitis. The speaker said that he was unable to positively state as yet that the bacilli and spirillum are actually the cause of the lesions, because cultures have not been made, nor has reinoculation been successful. The lesion has a distinctly chancriform appearance at first, and is often situated in the most dependent portion of the tonsil. There is a certain amount of induration; salivation is present; the breath has a fetid odor and the submaxillary glands are enlarged and indurated. The borders of the gums, the lips and the tongue are the principal seats of the affection in the mouth. The dura-

tion of the disease is usually from four to six weeks, and the prognosis is good, though there is a tendency to recurrence. In making the diagnosis it was important to differentiate the affection from diphtheria and syphilis, and it could only be positively done by bacteriological examination. Without the laboratory many persons would surely be condemned to much treatment and unnecessary worry on the supposition that the affection is syphilitic.

Ulculo-membranous Lesions of the Tonsil in Children Associated with the Fusiform Bacillus (Vincent).

DR. CHARLES HERRMAN read this paper. He said that it had only been within the last three years that German writers had noticed this affection. It was by no means uncommon, though it had been, strangely enough, ignored by English and American authors. He had personally seen this affection in twelve young children. In six cases the ulceration had been on the right tonsil, in four on the left, and in two on both. In the last, smears from both tonsils demonstrated the presence of fusiform bacilli and spirilla. Similar ulcerations may occur on the tongue, cheeks and gums. The patches are usually irregularly circular or oval, and are best described as "chancroidal." Except for the necrotic base the lesion looks like a punched-out ulcer. Only within the first twenty-four to thirty-six hours does the lesion appear membranous, and even then if touched with a swab the latter will readily enter a cavity, varying in depth from one-eighth to one-half an inch. With two exceptions the salivary lymph glands were enlarged. The glands had remained enlarged for some time after the healing of the ulcer. The fever was rarely high enough to cause much constitutional disturbance, and the children are usually brought to the physician because of sore throat and difficulty in deglutition. In two cases seen at the outset, the resemblance to diphtheria was so marked that antitoxin had been at once injected. However, this treatment had had no effect whatever in hastening the healing of the ulcer. Clinically this affection differs from diphtheria in that it is an ulcerative process, shows no tendency to spread beyond the tonsil and is not accompanied by the prostration of diphtheria. The fact that other members of the family are affected would not serve to differentiate these two diseases, because, in his experience, two or three had been found in one family. The affection was distinguished from follicular tonsillitis by the absence of constitutional disturbance and the absence of the well-known spots. Whereas in diphtheria microscopic examination of a smear was of but little value, such an examination in

the class of cases under discussion served to make the diagnosis positive. In all of the cases examined the microscopic picture had been practically the same, and the bacilli and spirilla had been found in large numbers. Vincent distinguished two forms of angina: (1) the diphtheroid, in which the bacilli alone were present, and (2) the ulcero-membranous form, in which both the bacilli and spirilla were found, but in all the cases that he had examined the two micro-organisms had been combined. The spirilla are long and shaped like a corkscrew. When the bacilli are examined in some of the patient's sputum they are found to be motile. No spores had been discovered after staining. The deeper into the mass the swab is passed the more numerous are the bacilli and spirilla. In ulcerative stomatitis of the gums, lips, cheeks and tongue the same microscopic picture was found as in the ulceromembranous lesions under discussion. Inoculations of cultures under the muscles produced abscesses or tissue necrosis. In none of his cases had the Klebs-Löffler bacilli been present. From other observations it was not improbable that there is a definite relation between the fusiform bacillus and the spirillum, but it is likely that the bacilli play the more important part. The specific character of the bacillus seemed probable from the uniform presence of this bacilli in nearly pure culture, the gradual disappearance during the process of healing, and the rapid disappearance when healing was complete, and the fact that the affection has been transmitted from one person to another. Considering the depth of the ulceration, the amount of tonsillar destruction was remarkably slight. The treatment employed by the author had consisted in the application of nitrate of silver in three to five per cent solution. In one patient in whom the tongue, cheeks and gums were also involved, healing had not been complete for forty-two days. Though the application of iodine was more disagreeable, it seemed to be more effective.

DR. MORRIS MANGES reported a case occurring in a girl of seventeen, who also had chronic nephritis with considerable œdema. This patient showed the various stages which had been so well described in the preceding papers. In the first attack there had been the usual appearance of follicular tonsillitis; in the second attack membrane had been present on the tongue, gums and tonsils, and in a third attack the tongue, lips and mouth had been more particularly involved. She had been admitted to the Mount Sinai Hospital on February 11, 1901, with a diagnosis of chronic nephritis. There was no elevation of temperature, but five weeks later the temperature rose to 101°F., the pulse to 104 and the

respiration to 32. At this time small follicular ulcerations had been noted on both tonsils. Within two days the temperature had reached normal, and cultures were negative. On April 15th the temperature had again risen to 101° with almost no constitutional disturbance. On the following day there was considerable œdema of the face and eyelids, and on the tonsils were small membranous areas. Two days later the tonsils were much enlarged, there was marked glandular involvement and decided stomatitis. The case so closely resembled diphtheria that the girl was isolated and cultures made. The fusiform bacilli were found, but no diphtheria bacilli. Three days later the tongue became much swollen, with a patch on the under surface. One notable feature was the pain, which was more marked than usually seen with lesions presenting a similar appearance. On the sixth day the tongue was clean, but the tonsil was still swollen. The girl remained well until June 2d, when the throat became reddened, and at the same time she developed a bronchopneumonia, probably as a complication of the nephritis. On July 24th the temperature had risen to 100° , on the following day to 101.2° , and in two days more it was normal. In this attack both tonsils were covered with small discrete patches at first, having a pearly œdematous appearance. The submaxillary glands were more markedly involved in this attack, and there was excessive swelling of the tongue. On the under surface of this organ was a pearly and somewhat œdematous membrane, the removal of parts of which left a bleeding ulcerated surface underneath. The membrane was also on the cheek and gums; there was a marked salivation, and the patient's condition was one of great suffering. Deglutition was so painful that rectal feeding was necessary. Boric acid, chlorate of potash, iodine and peroxide of hydrogen had all been tried, but without effect, and the disease seemed to run its course unmodified by treatment. In the interval between the attacks the mouth had been examined for the fusiform bacilli, but none found. The appearances presented by this case were such as might easily lead to a diagnosis of diphtheria.

DR. E. LIBMAN said that certain investigations showed that these organisms were not confined to cases of stomatitis. They had been found in connection with abscesses and necrotic processes in other parts of the body. He believed that it was probable that the organisms acted secondarily to the invasion of one of the usual organisms, for instance, a streptococcus.

Plant had described these organisms in ulcerative lesions of the mouth in 1894. Vincent had brought the subject to attention

in 1896. Bernheim's work was done independently of any knowledge of the researches of Vincent.

The main cultural work had been done by Niclot and Marotte. They obtained results in the condensation water of certain serum media and in fluid serum media (*Revue de Medicin*, 1901, No. iv). Results were not usually obtained until four days had elapsed, so that observations of tubes for a shorter period are not to be depended upon.

They succeeded in inoculating animals successfully even with the third generation. After twelve days abscesses usually resulted, which healed in about one week after incision. The organisms were recovered from abscesses, but streptococci were always also present.

DR. LIBMAN stated that Salomon had found the organisms alone in a typical case of aphthous stomatitis. Salomon had not found the organisms in 220 cases of diphtheria, but had found them in cases of syphilitic ulceration of the throat. In two instances an ulcerative lesion, apparently due to the bacillus and spirillum was immediately followed by mucous patches. Other observers had claimed to find the typical findings in a few cases of diphtheria. As the matter now stood, Dr. Libman said, it would appear that the presence of the spirillum and bacillus almost excluded the diagnosis of diphtheria but not of syphilis. But if a person presented himself with a lesion in the throat suspicious of being specific, but not distinctly such, and the bacillus and spirillum were alone present, and there was no history of specific disease, it would be advisable to try local treatment adapted to the ordinary ulcerative lesions of the throat before putting the patient on specific treatment. These lesions often healed quite rapidly on simple treatment, and if specific treatment had been used, the cure would be used to establish an improper diagnosis of syphilis.

DR. B. LAPOWSKI said that the foregoing remarks would lead one to suppose that this bacillus is specially associated with this particular form of angina, but it is found in a great many other conditions, though not in such large numbers. There had not been one successful inoculation made with the fusiform bacillus without the streptococcus. In his opinion their presence was nothing more than a symptom, not a pathognomonic one, though very important, to be elicited only by microscopical examination. In cases of gangrene of the skin or of the mucous membrane resulting independently of any systemic cause, in noma of the mucous membrane of the mouth a similar bacillus would be found situated deeply in the tissues.

Cases had been reported in which a diphtheroid appearance of the mouth associated with this bacillus had developed after the administration of antipyrin.

The patient suffering with syphilis, or in whom syphilis is suspected, the presence of bacillus may lead to serious mistakes in diagnosis. The clinical picture of angina associated with the bacillus and syphilis of the mouth is so much alike that the best observers identified the two processes. Even a chancrous ulcer in the mouth, followed by an eruption, does not necessarily, in the presence of the Vincent bacillus, mean syphilis, as an eruption was observed in connection with the Vincent bacillus (Nicolle).

Even in a syphilitic patient mercury must be carefully avoided in the presence of an angina (Vincent), as otherwise prolonged and persistent ulceration is likely to result.

A case has been published where the ulcerative process, associated with the *B. fus.*, has been found in the larynx of a child.

DR. JACOB SOBEL said that their object in presenting this paper had been to call attention to a subject which had not been sufficiently studied, particularly in this country. He was sure that in the past he had seen many of these cases and had diagnosed them as clinical diphtheria, but the bacteriological cultures had uniformly failed to show the diphtheria bacilli. If a child presenting but slight constitutional disturbance shows an ulcer on one or both tonsils, with little or no inflammatory halo, and a probe or swab, on touching the ulcer, breaks through into necrotic tissue, one may be almost sure of finding the fusiform bacillus and numerous spirilla. Sometimes there is a yellowish or greenish membrane limited to the tonsil, and covering a cavity. There are many gradations between these two forms—the ulcerative and the membranous—but all have a worm-eaten sloughing base. He had only seen one child having this affection which had seemed to suffer much pain. In some of the reported cases albumin had been found in the urine, though this had not occurred in their own series of cases. While there was no true extension of the process, it may appear to do so simply by contact of adjacent tissues. In general, the ulceration speaks against diphtheria because ordinarily ulceration in diphtheria does not take place until much later; moreover, ulcerative cases of diphtheria present much more constitutional disturbance than is observed in the cases under discussion. Follicular tonsillitis does not seem to predispose to this condition. The membrane is not the important feature; it is the ulceration.

DR. E. MAYER said that he had mentioned that his patient came from the higher walks of life because some seemed to think that this is a filth disease. When enormous numbers of fusiform bacilli and spirilla are found in connection with a necrosis of the mucous membrane of the throat, the evidence, to his mind, amounted almost to a positive proof of the causal relation of these organisms.

DR. HERRMAN said that as Bernheim first published in detail the clinical and bacteriological features of these cases, it seemed as if he should receive the full credit, though several others had antedated him in noting the presence of these bacilli in this class of cases.

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